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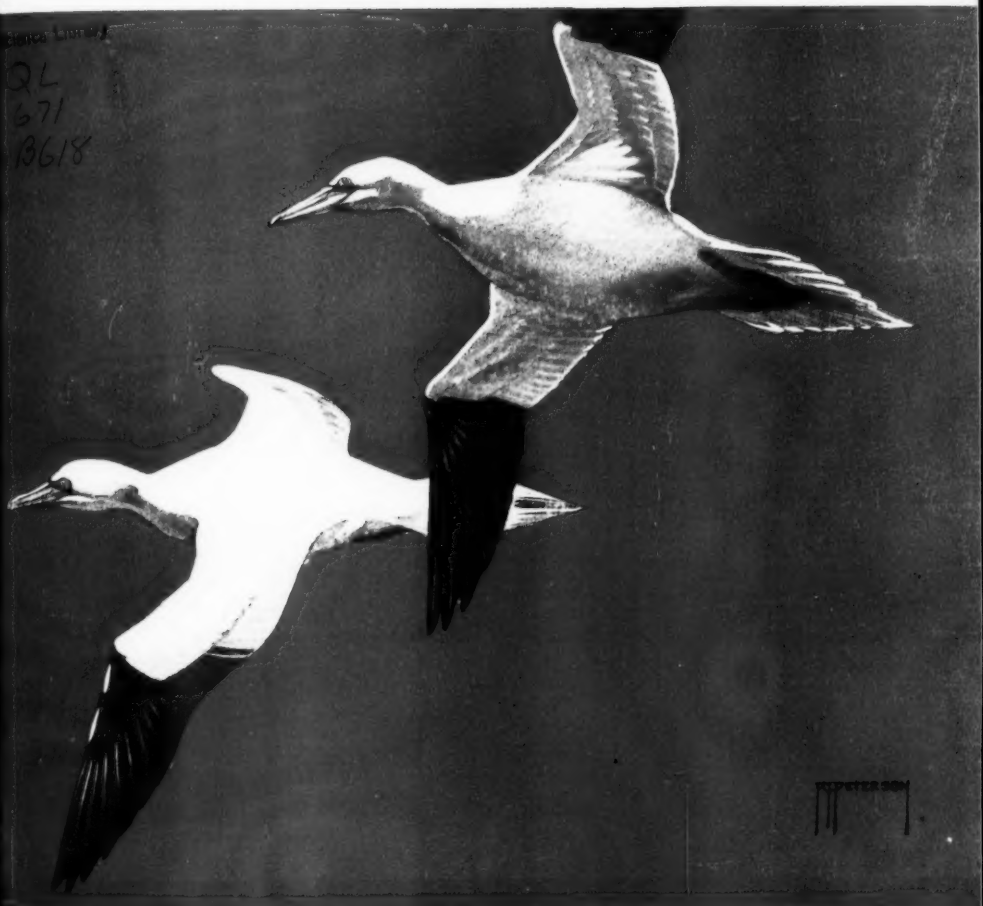

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THE NATIONAL ASSOCIATION OF AUDUBON SOCIETIES

BIRD-LORE

A BI-MONTHLY MAGAZINE DEVOTED TO THE STUDY AND PROTECTION OF BIRDS AND MAMMALS

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THE PRESIDENT'S PAGE

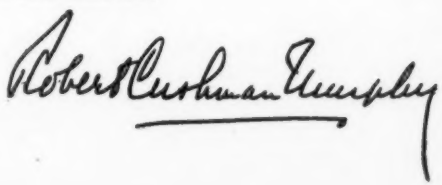
COME to the Annual Convention!

During four days, from the evening of October 21 to that of the 25th, the cohorts of the National Association of Audubon Societies and their friends will have an opportunity to learn what the organization has been doing, what appear to be the pressing needs of the hour, and what the program of the future should and will be. They will meet our zealous professional corps, together with active fellow members from all corners of the country and representatives of kindred societies that help to form a united front for conservation and sound nature education. Furthermore, they may take part in the house-warming at the Association's new home on Fifth Avenue, New York City, which is likely to serve as headquarters for many years of growth.

The sessions will open on Friday, October 21, with the Third Reunion Dinner of the Audubon Nature Camp, a healthy offspring which has now developed from promising adolescence to full maturity. The week-end will be given over to field-trips, under the best of guidance, to the historic ornithological environments of Montauk Point and Cape May—take your choice. Then will follow the general business meetings, with stirring reports from staff and field agents, accounts of special research projects, discussion of regional problems, and addresses by the Chief of the U. S. Biological Survey and a spokesman from Canada. There will be motion pictures in natural color of the California Condor and other visual treats, and a luncheon for accredited delegates from all affiliated clubs.

On Tuesday, the 25th, the annual dinner, necessarily in more spacious accommodations than ever before, will close the proceedings, and its program will include magnificent color motion pictures of birds.

Elsewhere in this issue of BIRD-LORE (on page 346), members may acquaint themselves with further details of the yearly celebration, stock-taking and crusade which, we trust, will bring them to New York from near and far.



Noddy Tern

BY HUGO H. SCHRODER

BIRD-LORE

SEPTEMBER-OCTOBER, 1938

The Tern Colonies of Dry Tortugas

By James O. Stevenson

WHEN a hurricane swept through the Dry Tortugas Keys off the coast of southern Florida in 1935, Bird Key, the historic breeding grounds for thousands of Sooty and Noddy Terns, was entirely destroyed. For some time this key had gradually been reduced in size, until the hurricane washed away what little remained of it. For more than a hundred years, and no doubt much longer, Bird Key had served as the main Florida nesting grounds for thousands of these Terns, although some birds have, since 1919, used adjacent keys in increasing numbers for nesting purposes. The Tortugas atoll is unique in that it is the only summer home in the United States for these species, whose colony there has been made famous by the extensive studies of Audubon, Watson, Chapman, Bartsch, and other bird students. The Dry Tortugas group and surrounding waters are included in Fort Jefferson National Monument under the administration of the National Park Service.

On May 24, 1937, I had an opportunity to visit the monument, located in the gulf some sixty-five miles west of the town of Key West. As our patrol-boat passed down the channel alongside Garden Key toward the dock, a swarm of screaming Terns arose from their nests on the beach on the east side of Fort Jefferson. Philip Puderer, at that time Acting Superintendent of the monument, told me that the previous spring, when the birds returned, they proceeded to occupy Bush Key, a small island lying a few hundred yards east of the fort. In 1937 the first Terns came about the middle of April and could be heard on the other keys—coming in after dark and departing before dawn to fly out to sea. On May 2, a squall hit the keys and the Terns soon afterward 'took' Garden Key, and began nesting. Fort Jefferson was again garrisoned after thirty years' abandonment! Each day, up to the middle of June, brought more birds until, perhaps because of lack of room, many new arrivals went over to Bush (sometimes called Long) Key. Just why the birds first chose Garden Key, where a labor crew

was active, is something of a mystery but at any rate here, in the lee of the fort, they were sheltered from northwest blows. At that time, also, Bush Key was not too desirable since rats, which had escaped from Cuban fishing boats, infested the island and raised havoc among the birds. It was necessary to initiate a project aimed at eliminating this exotic predator, last winter, and results have been very gratifying. Future invasions will be prevented at their point of origin.

In the present year, the Terns arrived about the first of May, also first choosing Garden Key, establishing nesting sites near the coal bunker. As each group of new arrivals appeared, they settled just south and next to the previous group lining up like battalions on a parade ground. When all the available territory east of old Fort Jefferson was occupied, the next birds started on the tip of Bush Key and continued the process eastward there. As the rats were removed this past winter, much better nesting success is predicted.

Dr. Paul Bartsch, of the National Museum, who has visited the Tortugas for a number of years and is thoroughly familiar with the Tern colony, believes that last year was the first season that the majority of the population inhabited Garden Key and the first time that Sooties had ever been recorded as breeding there. In more recent years some birds did abandon Bird Key, and both Sooties and Noddies have nested on Bush Key, while a few Noddies used the old coal dock near the fort for their nests.

We found that the Sooty Terns on Garden Key were occupying a strip of beach, about three acres in size, between the fort's east moat and the sea. Originally there was very little land on this side of the fort but, since a coal bunker was built for use in refueling navy ships, there has been a gradual building up of coral sands. Thousands of eggs were found in depressions scooped out of the sand in the open, under bay cedars, beneath the coal dock, or in crab-grass, near patches of sea oats and among vines and mats of sea purslane. In very few cases was more than one egg found in a nest. It was too early for young birds, and most adults were incubating their single eggs or standing guard over them and shading them from the sun. These quarrelsome birds fought incessantly. Many were still engaged in selecting sites and holding them. Each nest appeared to be spaced by its guardian just out of pecking distance of the next bird.

Eggs were everywhere—even on top of the brick counter-scarp wall bordering the moat. Several hundred Sooties had chosen unusual and rather uncomfortable sites for their nests. Eggs were laid on the concrete floor of the abandoned coal bunker among all kinds of debris. On and under corrugated iron we discovered birds whose eggs were placed in a mixture of coral slag, broken glass, and bits of rusty iron. Many of these eggs were found to have a definite rusty color, contrasted with the paleness of normally colored eggs near-by and those on the beach. The authors of a recent publication would have us

Photo by National Park Service

The army of Terns as seen from a bastion of the fort

believe that "this shows a remarkable rapidity of adaptation to needs, as birds had not previously nested on the docks." This would indeed be a marvelous color adaptation, developed almost overnight, so to speak. Unfortunately for the theory, the color or bloom on the eggshells is caused by minute rust fragments adhering to the shells. This bloom can easily be washed off!

As is customary with Noddies, most of them on Garden Key had constructed nests of twigs in bay cedar bushes, although several were incubating eggs in nests on top of old pilings and beams of the coal dock. This unusual nesting habitat has been described previously by Dr. Bartsch and others. We photographed one bird whose sketchy nest on a plank of the loading trestle near a railroad track was composed entirely of shells and iron fragments. Some returned to this bunker this year but most Noddies used bushes or haycocks and some nested very close to the ground on clumps of grasses. Many were right among the Sooties, from a few inches to a foot above the ground. Daniel B. Beard, biologist of the Service, informs me that Noddies seem to like shade. Some Noddies would sit in the cannon ports of the fort, watching their nests across the moat. When a brooding bird would leave its nest, the mate flew over to take its place.

The Sooty Tern colony on Bird Key had fluctuated through the years from about 20 to 30,000 individuals, while the Noddy population, always less spectacular, ranged from a few hundred to several thousand. As late as 1929, over 3000 were present. With the total obliteration of this breeding ground (used less and less in recent years), much interest has been aroused as to the numbers which have returned to the new main nesting areas for

the annual April–September sojourn. Some people who have visited these keys for several years believe that the colony is declining, while others, notably officials of the Florida Audubon Society, contended that more birds nested in 1937 than ever before. Members of this Society, on their annual outing to the Tortugas in late June, roughly estimated the adult Sooty population as from 75,000 to 100,000, and Noddy about 2000. These numbers were computed, with Mr. Puderer's aid, from the count on sample areas.

This spring has witnessed perhaps the most accurate census ever made in the Tortugas. Mr. Beard scaled the open areas on both keys and, by counting the number of Sooty Terns actually incubating eggs in sample plots (in which there averaged from 2.5 to 3.6 birds per square yard), computed the number for the entire habitat. Assuming two birds per nest, the total was obtained by doubling this number. As the distribution at the coaling dock and in thick vegetation was uneven, brooding Terns here were actually counted and the total also determined by doubling the number. In all, slightly over 64,000 Terns were tabulated, about three-fifths of this number on Bush Key. The Noddy population was determined by counting all occupied nests. The number of birds was estimated at 413, a figure considered reasonably accurate. This number is far below par but it is difficult to believe that this is entirely the result of previous rat predation, a factor perhaps overemphasized. Further study is being given to this problem and it is hoped that the population will increase to more normal numbers.

It was noticed in 1937 that Sooties seemed well able to withstand rodent attacks, as they nested in compact groups. The Noddies were scattered, however, and those nesting at some distance from the Sooties lost many eggs and young.

Sooty Terns with eggs at the coaling station

Photo by National Park Service

As the greatest number of Noddy nests this year are placed at low elevations, right among large groups of Sooty Terns, what few rats may be present should do little damage. The chief predator of Sooty chicks appears to be the Man-o'-war-bird, which is present in soaring hundreds above the fort in summer. Although this predator takes quite a toll of young, the Sooty population seems well able to withstand this pressure. The Noddy nests, being less exposed and more carefully guarded, are probably seldom or never robbed of chicks.

The selection of the present nesting grounds close to monument headquarters in the fort has allowed the superintendent and workmen to patrol the colony and give it maximum protection against would-be 'eggers' from Cuba or Key West. National Park Service and Audubon Society wardens learned early last spring that certain Key Westers planned an expedition to the Tortugas to collect Tern eggs for marketing. Although the proximity of an outer garrison of noisy Sooties aptly nicknamed 'Wide-awakes' has its drawbacks, as the men in the fort spend many a sleepless night, protection against egg-collectors has been rendered much easier since all the birds have chosen to occupy Garden and Bush keys rather than more remote islands in the group.

The National Park Service extends a cordial invitation to bird students who yearn for a taste of the tropics to visit the keys and study their rich marine fauna and bird-life. Five species of Terns nest here—on Sand Key a few hundred Common, Roseate, and Least Terns lead a colonial life each year. Incidentally, the Least Tern is the only one of these that nests elsewhere in Florida. In addition, here one has a good chance of finding Blue-faced Boobies perched on outer channel buoys and perhaps an Ani or two skulking among the brush. All in all, it's a fascinating place for the study of bird behavior and, in migration, one may become familiar with a number of forms that use the keys as stepping stones in their flights across the Gulf.

ASSOCIATION IN NEW HOME OCTOBER 10

The headquarters of the National Association of Audubon Societies will move to a new address—1006 Fifth Avenue—on or about October 10, and members are requested to note this change of address. Mail will, of course, be forwarded but it will facilitate matters if members will be so kind as to use the new address. The 'phone number will be Bu 8-2640. There will be a housewarming at the new building, Monday, October 24, from 4.30 to 7.30 P.M., at which all members will be welcome.

Some Values of Natural Areas

By **V. W. Lehmann**

Field Biologist, Texas Coöperative Wildlife Service,* College Station, Texas

Photographs by courtesy of the Texas Coöperative Wildlife Service

JUST what is a natural area? Webster defines natural as "pertaining to nature, produced by nature, or in the course of nature inborn." An area is said to be "any defined extent of land surface; any plane having bounds whether natural or artificial." According to the above definition, relatively many natural areas still remain in Texas. For example, plots of uncut timber and native hay meadows, however small in size, seemingly satisfy these general requirements. Such areas certainly pertain to nature; they were produced by nature and they were in the course of nature inborn. But is the plant life and the animal life of such areas worthy of comparison to that which existed before the intrusion of white men? Is the definition of natural area, as I found it in my dictionary, really adequate and satisfactory?

I have come to associate the word natural with the state of the plant and animal life on our continent before the coming of white men. And the word area, in terms of our native wild life, to me implies a large tract of land, preferably 100,000 acres or more in extent.

The standards I have set up, you may say, are possibly too rigid. An area as large as 100,000 acres in size, with the native flora and fauna in even a semblance of its former richness, can hardly be found. Man's agencies of exploitation have reached almost every acre of ground in our State. Unfortunately, no really natural areas remain.

There are, however, a few regions in which the plant and animal life might build back to a nearly natural state. The outstanding example of a potentially natural area in Texas is, I believe, our own East Texas Big Thicket.† Although the native wild life of the region has been sadly depleted, many of the species may yet recover, provided, of course, that the causes of present unwholesome conditions are removed.

What values would accrue from 100,000 acres or more of the Big Thicket maintained in a nearly natural condition? For one thing, the undisturbed area would serve as a

*The Agricultural and Mechanical College of Texas, the Texas Game, Fish, and Oyster Commission, the American Wildlife Institute, and the Biological Survey, United States Department of Agriculture, coöperating, Walter P. Taylor, Senior Biologist, in charge. Address made at the meeting of the Texas Academy of Science, Beaumont, Texas, June 25, 1937.

†A wooded tract occupying parts of Polk, Tyler, Liberty, Hardin, and neighboring counties in southeast Texas.

Photo by D. W. Lay, Texas Cooperative Wildlife Service

Blue beech (at right), birch, cypress, and numerous other woody species along Sandy Creek in a still remote section of the Big Thicket. Man can destroy but he can hardly rebuild areas such as this. Polk County, Texas, March 21, 1937.

vast outdoor laboratory which would, I believe, open the way to advances in almost every branch of natural science. From this natural laboratory might come answers to questions that I shall presently pose; questions which might be answered more satisfactorily if there existed suitable proving grounds in the form of natural or nearly natural tracts.

1. Does the elimination of so-called weed (coon and squirrel trees, various hardwoods, etc.) trees from the pine forest increase the yield of merchantable timber to an extent that offsets an invariable loss in valuable bird and animal life?

2. Are parasites and diseases of valuable timber more severe or less severe in an improved area?

3. What is the effect of so-called timber improvement and fire exclusion on soil fertility, forage production, and ultimate usefulness of the forest tract?

4. Should fire be eliminated from the southern pine forests which seemingly evolved under conditions of periodic burning?

5. What are the relative merits of artificial as compared with natural methods of erosion control? Do certain of the present accepted methods of soil conservation really remedy the underlying cause of the trouble?

6. What about the place of the so-called noxious weeds in our native flora? Is regular mowing or pasturing by goats and sheep necessary to keep the weeds in check?

Photo by D. W. Lay, Texas Coöperative Wildlife Service

Long-leaf pine, short-leaf pine, water oak, magnolia, beech, bay, and a rich understory beside a little-traveled road in the Big Thicket. Lumbering, so-called 'timber-stand improvement,' heavy grazing, or similar radical changes by man deplete such areas of their natural beauty, interest, and value. Polk County, Texas, April 21, 1937.

Would weeds be largely eliminated naturally if grazing pressure were adjusted to what the range is capable of supporting?

7. How prevalent are insect plagues in an area where insectivorous birds are allowed to exist undisturbed?

8. Are flesh-eaters and raptorial birds effective controls of sometimes harmful rodents or do the predatory animals and birds merely act to retard the course of disease cycles, possibly the major mortality factor?

9. What about 'harmful' rodents in general? Are they a cause or an effect of overgrazing or other forms of unwise land use?

10. And, concerning nature's interrelationships in general, under natural conditions, is a sort of biological balance maintained through the effects of plants on animals and of animals on plants?

One might cite additional important and only partially solved problems. Suffice it to say, however, that undisturbed areas approaching a natural state would certainly promote the advancement of knowledge.

But practical values from natural areas would be surpassed, I believe, by the esthetic gains. Conservationists look on natural areas as the only means of saving some species of animals and plants from otherwise almost certain extinction. In the Big Thicket section, a number of

Photo by D. W. Lay, Texas Coöperative Wildlife Service

A pure stand of second-growth long-leaf pine in another section of the Big Thicket. Primarily as the result of cutting, regular burning, and heavy grazing by livestock, the area is nearly a biological desert, except for the pines and the grasses. Hardin County, Texas, May 22, 1936.

threatened species come to mind; the black bear, the beaver, the Mississippi wolf, the otter, and possibly the Ivory-billed Woodpecker are a few of them. Elsewhere in Texas we find the big-horned sheep, the antelope, the red wolf, the ocelot, the Chachalaca, the Attwater's and Lesser Prairie Chicken, the Black-bellied Tree-duck, the Masked Duck, the White-tailed Kite, the Mexican Black Hawk, and many others facing a similar fate. These species do not seem capable of adapting themselves to the changed environmental conditions replacing those destroyed by man. It is believed, however, that many of these forms will recover if provided with suitable sanctuary areas. Natural areas are a means whereby certain species may be saved for posterity; for this one reason alone, natural areas seem well worth whatever it may take to make them an actuality.

Our wild life and the natural resources that underlie our civilization are facing an emergency that is so critical that we dare not visualize the probable outcome. The present emergency is to my mind even greater than the crisis which inspired the memorable address which Lincoln made at Gettysburg; the address which, with your consent, I shall attempt to paraphrase:

Ages ago nature brought forth on this continent an abundant plant and animal life conceived in beauty and dedicated to the proposition that all men have an equal share in its worth. Since the dawn of our nation we have been engaged in a great war testing whether the wild

life of the Big Thicket or the wild life of any area can long endure. All about us are battlefields on which the most noble as well as lowest creatures have been killed or wounded by man's selfish actions. The eloquence of the ugliness left behind is far above our power to add to or detract. It calls us to the task now before us that from the memory of our wonderful native wild life so ruthlessly destroyed, we take increased devotion to the conservation of that which remains. Let us highly resolve that those dead shall not have died in vain, that our native plants and animals shall be preserved by the people, for the people, and their natural beauty shall not perish from this earth.

Sapsuckers

South of the farm house on a sloping hill
Where long ago an orchard used to be
Stands an old tree as gnarled and gray as death,
Leprous with lichens, and around its trunk
Ring upon ring of tiny pitted scars
Where Sapsuckers have sought their sustenance.
The birds are gone. They do not come again
But in some distant woodland drink their fill
From younger, sweeter, less resistant trees.
Deserted now, this tree will always bear
Mute record that it was beloved of birds.
If some one had the skill to peer within,
Deep through the wrinkled skin and obdurate bone
And view the heart I locked up long ago,
They'd find it scarred and pitted by the pecks
The Daws made on it in those gallant years
When I so gaily wore it on my sleeve.
But now that April sneaking up my lane—
So vague I would not be aware of her
Save for the quince-blooms scattered on the grass—
Blows in my ear, roughs my remaining hair
And with old smells wakes vanished ecstasies,
The tree appears more supple in its limbs
Than when I viewed it last two weeks ago.
I feel, somehow, that in a little while
My gray old friend the tree, and I, shall laugh
And both of us put forth a few green leaves.

—Eugene Edmund Murphey

"THE GOOD EARTH"

The soil is alive. Men, birds, and other creatures depend upon it, so it should be treated well

***By* Roger T. Peterson**

A Walk in the Country

One Saturday morning, a dozen members of the Junior Audubon Club took the dirt road north of town, the one that goes to the river. Some of the best 'birding' spots near town could be reached by the wood trails that lead off this road. One open glade that ends in a cow-pasture was always good. This morning when they crossed the little brook and entered this charming spot they were more conscious than ever of the number and variety of things that lived there. Some people could have taken this same walk and, being too busy with thoughts about themselves, would have seen nothing but the grass and the trees—but not these young people. Their eyes were keen and they saw many things. A Flicker flew from a large anthill where it had been grubbing with its long bill; a little party of sulphur butterflies hovered around a wet, muddy spot on the path. A male Song Sparrow sang from a bush top and dashed after another Song Sparrow that trespassed on his territory. Chipmunks scampered under the rocks of an old stone wall. Dragonflies hawked the air, and everywhere there were living things, crawling, hopping, or flying.

It had never occurred to the class until today how much the soil had to do with the lives of these creatures. Many of them foraged amongst the plants or scratched or grubbed in the debris at the grass roots. The soil seemed to have a great fascination for them.

The teacher commented on this, and one of the boys suggested that they take back a sample of the soil so that they might see what was in it. The small trowel and the pail used for transporting plants to the school garden came in handy. A handful of surface dirt and debris from an open grassy spot revealed an ant, a tiny spider, and several other small creatures. This looked promising, and it was dumped into the pail and a section of earth 12 inches long, 6 inches wide, and 4 inches deep was carefully scooped out with the trowel and dumped in with it. They found by probing deeper into the soil that only an occasional grub or earthworm could be found deeper than 3 to 4 inches.

Millions of insects and other invertebrates live in one acre of topsoil.

Most of the small animal life lived near the surface. One-half square foot of soil would be quite enough to analyze, so a piece of cloth was tied tightly over the pail to prevent anything from crawling out.

What Was in the Soil?

When they returned to the clubroom, the question arose as to the best way to find what was in the dirt. Several suggestions were made:

1. Heat the dirt so that the insects and other small creatures will crawl out.
2. Drop the dirt bit by bit into a pail of water so that the insects will float to the top.
3. Examine the dirt, bit by bit, on a piece of white cardboard.

The last way seemed the most practical, as heating the soil might kill some of the little creatures before they crawled out, and the water process seemed too messy.

The pailful of earth was put on the center of the work-table and each student carefully picked over a handful of it at a time, on his piece of cardboard. If an insect or worm was found, it was picked up with tweezers and dropped into a little glass medicine vial. With twelve people working, it did not take long to run through the whole pail. The pail itself and its cloth covering were carefully examined, too, so that nothing would be missed. Some of the tinier things could be very easily overlooked. There were several very tiny, pale insects that could hardly be seen, so small were they. These were springtails, and they were very hard to catch, too, because they would jump when the tweezers touched them.

When the job was finished, one of

the boys offered to try to analyze the contents of the vial, with the help of several good books on insects and other invertebrates from the library.* His analysis showed the following:

Earthworms	2
Sowbugs	6
Centipedes	3
Millipedes	10
Mites	6
Spiders	1
Ants	15
Fly pupæ	30
Aphids	4
Beetles	4
Springtails	14
Unidentified	20
Total	115

One hundred and fifteen invertebrates in a half square foot of earth! Two hundred and thirty per square foot! What would that be per acre? That was easily determined on the blackboard.

43,560 (sq. ft. per acre)
× 230
1306800
87120
10,018,800

Over 10,000,000 small animals to the acre! No wonder the soil is such a favorite feeding-ground. Little wonder that Robins, Song Sparrows, moles, and mice spend so much of their time there.

Of course, the sample studied was especially productive. Woodland soil would be less productive in itself because many of the small creatures would be scattered throughout the undergrowth and in the leafy canopy of the trees overhead. It would be almost impossible to get an accurate count.

Micro-organisms

It was noted that most of the insects were in the ground debris and in the top 3 to 4 inches of soil. If a small sample of this same

For every plant and animal on the surface of the earth, there are multitudes in the soil .....Most of them are in the top three or four inches

Without them, life would stand still.... They make it possible for dead plants and animals to nourish living plants and animals

*In carrying out this project, it is not necessary to make a detailed analysis of the insects, etc. The combined number of individuals is the important thing.

A good bird population is a sign of healthy land

rich surface soil were placed beneath a powerful microscope, great numbers of tiny organisms could be seen, tiny plant and animal forms. These are micro-organisms; millions or even billions exist in a single gram of soil. These micro-organisms are perhaps as necessary as anything on earth. Without them life would stop. They form the link between the living and the dead. They transform dead plants and animals into a condition on which living plants and animals can be nourished.

The micro-organisms, insects, birds, mammals, man himself, and his crops are all dependent on one another. They all get their life from the soil and return to the soil when they die.

Birds and the Soil

If the life-giving topsoil were to go and the land be made lean, it is logical that birds would be less common, too. One of the boys, with an inquiring turn of mind, asked whether there were any actual figures to prove that birds were scarcer on poor land. The teacher said she did not know, but suggested that the answer might be found in the breeding-bird census reports in BIRD-LORE. The September-October, 1937 issue of BIRD-LORE was taken down from the shelf and opened to page 373. In glancing over the reports, it was seen that some of the highest densities of birds were found in swamps. In one cattail marsh, the density was sixteen birds per acre. This is what one would expect, considering the rich organic content of the mud and water. Most habitats had between three and six birds per acre. An exhausted abandoned field had about two birds per acre, a park in a large city less than one and a half. The lowest density of all was found on a fill, where much inorganic mud and gravel had been pumped onto a drained salt marsh. There were only six birds on 100 acres!

A good bird population, then, is "a sign of healthy land."

Scientific studies have shown that not only are the animals dependent on the soil but that the soil is dependent on animal life.

As animal activities in soils increase, soil-structure, fertility, and

cover are improved. Vertebrate animals, such as the mammals and the birds, often have as great an effect on the soil as the lower forms of animal life.

"The Topsoil Is Like Frosting on a Cake"

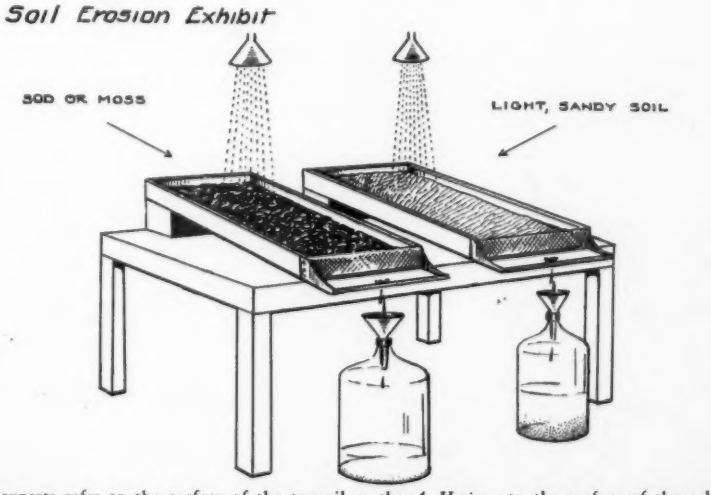
The top layer of earth, which is so full of organic life, has been likened to the frosting on a cake.* Some people eat the frosting off the cake first. We have eaten much of the frosting of topsoil off the American continent and are getting down to the less palatable subsoil. When the topsoil goes, everything that depends upon it is affected—the small creatures, the birds, and man and his crops.

Erosion Is Licking off the Frosting

Much of this loss of topsoil has been the result of *erosion* or a *wearing away* by wind and water, the teacher explained. To demonstrate water erosion in its simplest form, she used a large piece of wallboard propped up to present a slight slope. She took a watering-can and sprinkled a quart of water at the top. It slid off almost instantly. Next she placed an old piece of thick carpet on the board and repeated the sprinkling. (She got her idea from Stuart Chase's *Rich Land, Poor Land.*) Very little water ran through, at first, and the dribble continued for some time.

The wallboard, she explained, was a hillside with a slope; the can of water was rainfall, and the bare surface, plowed fields. The carpet was natural ground-cover, either grass or woodlands.

Over the bare fields, improperly plowed, the water comes down, taking with it the rich topsoil. In the second instance, the water sinks into the cover and is released slowly. Very little, if any, soil is washed away.



*Soil experts refer to the surface of the topsoil as the *A. Horizon*, to the surface of the subsoil, *B. Horizon*.

A Soil-erosion Exhibit.

The class thought this such a fine demonstration that they were eager to make a soil-erosion exhibit for the nature room. They gathered together the following materials:

2 wooden boxes (3 feet long, 1 foot wide, 4 inches deep)
2 small pieces of screen-door mesh
2 large glass jars
2 sprinkling cans
table for the exhibit
sod and moss for first box
light sandy soil for second box
2 pieces of tin
2 funnels
tar paper

The procedure was as follows:

1. The wooden boxes were made in the workshop. One end of each box was left open.
2. A strip of fine screening was tacked over the open end of each box.
3. The boxes were lined tightly with tar paper—except for the screened ends.
4. The boxes were propped up on the table at a slope (10 or 15 degrees), the screened ends at the bottom.
5. The tin was bent into a trough to catch the water at the lower end of each box just off the table. A hole was made in the center of the trough, through which the water could run.
6. Beneath each trough was placed a large glass jug and a tin funnel.
7. In Box No. 1, the bottom was covered with sod and moss.
8. In Box No. 2, the bottom was covered with the light sandy soil.

When the exhibit had reached this stage it was ready for a tryout. The water was sprinkled slowly so as to have the same effect as ordinary rain. It took about twenty minutes to empty each can. Care was taken to sprinkle the soil surface evenly.

The result was very convincing. The light sandy soil, without protective covering, allowed a much more rapid runoff. When the water in the jars had settled, much more sediment was found in Jar No. 2 than in Jar No. 1.*

America Is Washing into the Sea

The teacher inquired whether any student in the class had ever seen the Mississippi River. One girl had. On being asked whether it was clean or muddy, she did not hesitate a moment. She said, indeed, that it was almost yellow with mud.

The teacher explained that there always had been some silt in the great river, but now, since the coming of the settlers, it is estimated that an additional *300,000,000 tons of rich soil are dumped from the fields of the Mississippi Valley into the Gulf of Mexico each year.* No wonder the river runs brown!

One of the boys had driven to Florida with his parents. He noticed that the rivers in South Carolina and Georgia were almost red with mud. They, too, had probably been quite clear once upon a time. Statistics say the Southeast has impoverished 97,000,000 acres of its surface soil—97,000,000 acres—an area larger than the two Carolinas and Georgia put together. No wonder it is so hard to grow a cotton crop in some parts of the South today!

We like to think of our country as a rich land, but at this rate how long will it take America to become dead land, such as parts of China

*A somewhat more elaborate apparatus along these lines is described in Cornell Rural School Leaflet, Vol. 29, Number 4, *Save the Soil.* A simpler exhibit is described in *The Guardian* (Camp Fire Girls), February, 1938, page 5.

Photo by Soil Conservation Service

97,000,000 acres of land have been impoverished in the southeastern United States

and Mesopotamia—dead land where nothing grows?

Much Erosion Is Man-made

The teacher explained that most of this loss of land was due to man's mistakes and carelessness. He cut the timber completely off slopes that should have been lumbered more carefully, if at all. Without protection, the soil was washed from the rocks by the rain. Trees cannot grow on bare rocks, nor can rocks hold water, so as the years went on the gullies on the slopes were cut deeper and deeper.

Meadows were burned on purpose, and forests by accident. The burning killed the organic life in the topsoil, burned the humus, and set the stage for erosion.

Farmers placed too much livestock in their fields. Instead of putting three or four cows on a small piece of land, they pastured twenty or more. The cattle ate all the ground-cover, and packed the earth so hard that the rain could not sink in but ran off the surface, washing the dirt with it.

Most farmers plowed their fields *up and down* the slopes instead of *across* the slopes. The rainwater would rush through the furrows and carry much of the valuable topsoil with it to the bottom of the hill. In some places, gullies of tremendous proportions developed after a few years and hardly a thing would grow on the poor soil left exposed.

The practice of growing the same crop year after year on the same piece of ground and not alternating with a cover-crop that would return nourishment to the earth, soon exhausted the soil to the point where it often washed away easily.

These were but a few causes of erosion, the teacher said. She wrote them down briefly on the blackboard, so that the children might put them in their notebooks.

1. Careless lumbering
2. Fire
3. Overgrazing of livestock
4. Improper plowing
5. One-crop farming

Dust Storms and Floods

Erosion of a field here and a hillside there seldom caused much comment. The process was a gradual one that went on unnoticed except by the farmer who found, sooner or later, that he could no longer grow a paying crop on his land. But the newspapers carried stories of dust storms and great floods. This was big news, for it often meant the lives of many people. These catastrophies were called acts of God, over which man had no control. A few people knew otherwise. They could clearly trace these events to the eroded fields and hillsides. The rain fell, and instead of soaking into the ground, was carried away into the little brooks, whose banks could not always hold the unnatural rush of water. Erosion had set in there, too,—and so on into the big rivers. Instead of wandering slowly toward the sea, the water rushed down in a hurry. Great floods were caused by too much water reaching the same place all at once. When the drier months came, the water was gone prematurely from the little brooks and streams. They became dry and the soil parched. On the Great Plains the powdery, exhausted soil

Photo from U. S. Soil Conservation Service

BURNED. The unprotected soil washes away in the rain and often leaves only rocks on which nothing will grow.

Photo from U. S. Soil Conservation Service

BADLY FARMED. Erosion destroyed this field because the farmer plowed his rows downhill instead of following the contours. Notice how the soil has washed away.

was whipped into the air by hot summer winds and literally whole farms were blown away.

The Soil Conservation Service

The land is sick, but the cure is being sought. A bureau of the United States Department of Agriculture has been formed, called the Soil Conservation Service. Many of the men in the service are technicians who tirelessly study the problems of soil-destruction and the remedies. With the help of thousands of CCC boys, they have planted hundreds of millions of trees on eroded slopes, have sloped and planted thousands of shifting gullies, and have shown farmers how to plan their lands so no soil will be lost. They have not forgotten about wild life. Recognizing that wild life is dependent on the soil and the soil, in turn, upon wild life, a wild-life division is included in the Soil Conservation Service.

The class became very absorbed in the things the teacher had to say about soil-conservation. They took notice of signs of erosion on field-trips, and tried to guess at their causes.

The teacher wrote to the local county agricultural agent and asked him to apply to the Division of Motion Pictures, Extension Service, United States Department of Agriculture, Washington, D. C., for the loan of a 2-reel film called 'Save the Soil.' This was obtained in 16 mm. size to fit the school projector.* It was an excellent film.

The soil, at first thought, would not seem to have so much to do with birds, but it has a great deal to do with them. Even though they be 'children of the heavens,' they depend on the good earth for their very existence. And the earth needs *them*, too!

FURTHER REFERENCES

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Rich Land, Poor Land, by Stuart Chase. McGraw-Hill, New York. $2.50. Nor this.

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Soil Erosion a National Menace. Circular No. 33, U. S. Department of Agriculture. Apply to Superintendent of Documents, Government Printing Office, Washington, D. C. 25 cents.

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Soil Conservation. A magazine issued monthly by the Soil Conservation Service of the U. S. Department of Agriculture, Washington, D. C. 10 cents per copy, $1.00 per year.

The Dependence of Soils on Animal Life, by William R. Van Dersal, U. S. Soil Conservation Service. Printed and distributed by the National Association of Audubon Societies. 5 cents.

*This film is also available in 35 mm. size.

This is the second of a series of articles designed for the teacher who wishes practical methods of teaching nature study and conservation in line with some of the more modern concepts. The introductory article, 'How Should Nature Be Taught?' appeared in the May–June, 1938, issue of Bird-Lore. Future sections will deal with water, forests, grasslands, marshes, etc. These will later be available as separate leaflets.

Spoonbills in Holland

By **Frank Haverschmidt**

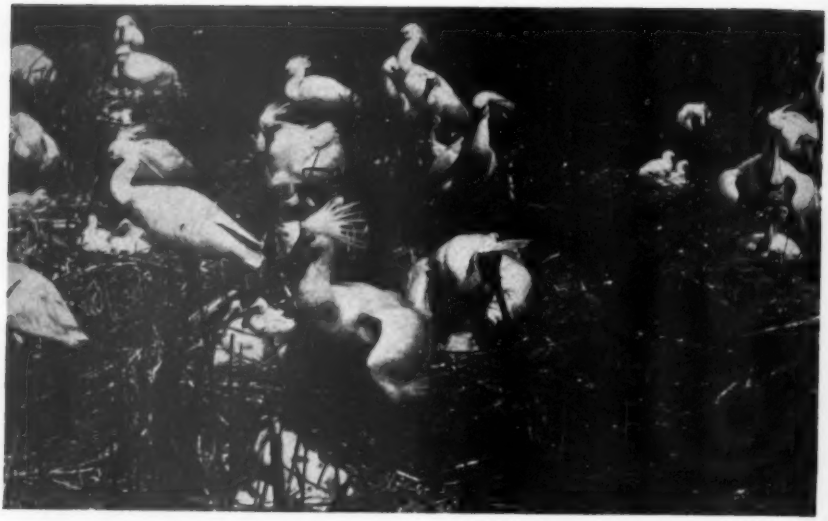
With Photographs by the Author

THINKING of European Spoonbills (*Platalea leucorodia*), one imagines endless reedbeds and impenetrable swamps in some remote spot in the Balkans or southern Spain. But this conspicuous and magnificent bird has in Holland a far outpost in western Europe. That it still survives and even flourishes in Holland, may be credited to rigorous conservation measures. Holland is a densely populated country where nearly all real wilderness areas have gone but it still can boast of having a number of outstanding and interesting birds breeding within its limits, and there is every reason to think that this will remain so for all time.

The Spoonbill still breeds in three places in Holland; and the only reason it still does so is because these breeding places are left in their natural state and the birds are guarded very carefully in the breeding season. Visitors are kept away, so that the birds may have all the seclusion they need for bringing up their young.

The accompanying pictures were taken in the largest colony in Holland where a fluctuating number of 100 to 200 birds nests annually. The place is privately owned and only on very rare occasions are visitors permitted to get a view of the birds.

I shall never forget that wonderful day in mid-May when I started,



in the company of the keeper, for the Spoonbill colony. Bedded in undulating dunes near the seacoast lay a small lake, sparkling in the sun like a mirror, fringed by a small reedbed; and in this reedbed the Spoonbills were nesting amid a noisy crowd of Black-headed Gulls (*Larus ridibundus*). At a distance of about twenty meters an open spot is seen in the reedbed, trampled down by the birds, and there stands a densely packed mass of large white birds, looking in the distance nearly like a flock of sheep, some Spoonbills flying with outstretched necks overhead, and a circling mass of clamorous Black-headed Gulls above them.

The nests, solid structures of dead reedstems, are very close to each other, often actually touching.

We approach slowly, in constant fear that the birds will fly away, but nearly all birds remain, to my great surprise, on or near the nests, and with slow movements I can take picture after picture without disturbing them. At last I stand only about two meters from some birds and still they remain on the spot, not in the least afraid of the two human intruders so near at hand. It is a never-to-be-forgotten sight to be so near a wild bird, and such a magnificent one as the Spoonbill! Some individuals, on being approached so closely, erect the splendid white crest on their head, spread their wings half open, and crouch over their small young in the nest, grunting angrily, with half-open bill, at the intruder.

It may sound strange, and even incredible, to those who have some experience in photographing wild birds, to learn that the accompanying pictures were taken by slowly stalking, without the use of any blind. These birds, which have been rigorously protected during many years, have become so accustomed to human beings—the keeper

visits the colony every day to see that all is well—that they have lost all their usual fear.

During my visit, there were, in most nests, small young about three weeks old, and afterwards I learned that at this age of the young birds the adult Spoonbills were most easily approached, being much shyer when they had eggs or older young.

In some nests there were still eggs, usually three in number, white with a few dark spots.

It was obvious what very quiet birds Spoonbills are; the only sound I heard was a soft grunting, a great contrast to the constant clamoring of the Black-headed Gulls flying overhead!

The way a Spoonbill gives expression to its emotion is by erecting and spreading its large crest, as is seen in the pictures.

It is suspected that some Spoonbills breed twice a year, though this has never been actually proven. The birds arrive in February, from the South, at their breeding colonies, and start nesting in the beginning of April. But even in June and July eggs are to be found. Most birds leave our country in August and September but stragglers are often seen in October and sometimes even in November and December.

Banding of the young has taught us that they travel along the coasts of France and Portugal to southern Spain, and even to the Azores and Canary Islands.

The Scourge of Poison Bait

By **Tony Lascelles**

A SCOURGE has ravaged the forests of Canada's hinterland for many years, leaving desolation in its wake, a scourge unknown before the white man came to filch the red man's heritage and scramble for the crumbs—the scourge of poison bait. And because of this, harsh words are on the lips of every conservationist and nature lover and those who gain an ever-decreasing livelihood on the trap-line, words of resentment that yet fall on deaf ears when aid is asked. And what is more, the menace shows no favor to any wilderness creature with a taste for flesh. The 'kicking death' brings not a qualm of conscience to those whose duty it is to apply a remedy.

Strychnine alkaloid is the poison which brings the 'kicking death' to Canada's hinterland. And poison is scattered about the forest for the acquisition of fur in defiance of paper laws lacking teeth and vigor because lay officialdom does not understand.

But it is easier to take the pelts of carnivorous forest folk with the aid of poison bait rather than use the conventional steel trap, especially when trappers are many and few fur-bearers remain to satisfy the demands of trade. A line of poisoned fat, poisoned chunks of moose meat, and often poisoned carcasses of game, give quicker results with less labor. But at what a cost! Little is left alive when the poisoner moves further afield with his ill-gotten bundle of fur, nothing but desolation and terror in the hearts of the native people, for strychnine does not only kill those who devour the bait in which it is concealed but creatures who feast upon the intestines of victims of the 'kicking death,' a vicious circle that does not end until the poison is weakened by its passage through several successive stomachs. As a wilderness biologist, I know of what I speak.

Ravens, Blue Jays, Chickadees, Nuthatches, Woodpeckers and red squirrels, creatures with a wilderness duty to perform, are among the victims who die and are eaten. And mice and shrews, the 'bread' of many forest folk, perish in thousands to hinder the recovery of those who depend on them for food. Countless worthwhile fur-bearers, for whom the poisoned bait was scattered, crawl away to die and are never found. Is there any wonder that harsh words are on the lips of those who believe that knowledge is the keynote of wilderness appreciation and management?

But other related events, as one

Red squirrels are among the victims Photo by Allan D. Cruickshank

would expect, are not far behind when a forest is cleaned with poison. The absence of certain carnivores permits the varying hare to increase beyond all bounds, assuming population values in excess of years of cyclic abundance. Saplings, the forests of the future, are girdled and killed, with the monetary loss, if nothing else, of millions of dollars. The lack of shrews and squirrels allows, to some extent, an increase of several destructive species of forest insects, whose larvæ in the pupa state supply an article of diet hidden in the shallow trash of the forest floor. The absence of birds is a further detrimental consequence. In all, whether one likes to believe it or not, the fact remains that a wilderness without a balanced biota is a wilderness potentially destroyed.

One is also prompted to ask how many native people die from the effects of eating poisoned carcasses of game, left with the appearance of natural death? This may be difficult to ascertain or even surmise, for the cause of death among isolated 'first Canadians' is seldom considered worthy of investigation, to say nothing of their sleigh dogs, the 'horses' of the North, who perish now and then after a scavenging expedition in the forest.

Not a pretty picture of the snow-covered Northland, believed to be crowned with the aura of glamor and romance, a picture which could be erased with ease if the authorities desired to prevent the use of poison for the acquisition of forest fur. Sixty days would suffice to attain the desired end were possession of

poisoned pelts, wherever found, and the possession of poison in the forests of the North, made a criminal offence. But pelts bring royalties to the gaping maw of treasury chests, and why question means of acquisition in times of financial stress? The fur farm and not the forest is the future producer of pelts—this is what one is asked to believe to ease the conscience of officials who permit the devastation of Canada's Northland by whatever means brings the best results in dollars.

Exaggeration? Not at all, when we remember that poison cherishes no favorites and is seldom specific in its action. To kill one form of life we must be prepared to kill many in payment. What could be more biologically and economically unsound in an age when, under the pressure of public opinion, governments are supposedly using every means known to science to bring back an approach to the virgin conditions of happier days.

And as for the pelts stripped from the victims of the 'kicking death,' they may be separated from a bale of fur with almost the same dexterity as one would discard the 'hearts' from a pack of playing cards. That is, if one has experience accompanied by a desire to stamp out a nefarious traffic. Every fur-buyer with knowledge of fur can identify a strychnine-poisoned pelt, a pelt which ten years ago would be cast aside as an inferior article unwanted by the trade. Capillary veins gorged with purplish blood, staring hairs, and underparts with a tendency to 'slip,' give mute testimony of what brought about the death of the animal it once clothed, irrefutable evidence which can be unearthed by Government officials, too, should they be instructed to intervene and know the score.

Meet the Lucy Audubons!

Something new in conservation has been started by the ladies of the Oregon Audubon Society, and their project merits enthusiastic imitation. They have taken over the Junior Audubon work of the Society, with headquarters at the home of Mrs. A. L. Campbell, Portland, where the members spend many hours a week filling orders. During the summer they gave talks on birds in six different city parks, in order to interest the children in forming Junior Audubon Clubs this fall. We shall expect a notable increase in Junior enrollments from Oregon!

Their activities are extending far beyond the scope of Junior work. They arranged a banquet and program on Audubon's 153d birthday, April 26, and had an attendance of approximately 100 people. They have charge of all bird-walks, which sometimes reach the considerable number of five a week! What the men of the Society have been working on our informant did not tell us. It must have been the men, however, who named these active conservationists the 'Lucys,' because of the success of all their undertakings. A Lucy Audubon movement sweeping the country is a pleasant and exciting phenomenon to contemplate, and the movement deserves to grow.

Among the more active Lucys are Mrs. Campbell, Mrs. Susie Nicholson, Mrs. C. L. Marshall, Mrs. Clara Carter, Mrs. J. W. C. Williams, Mrs. F. C. Blakeslee, Mrs. Whitney Starr, Mrs. C. Hildreth, Mrs. T. H. Brown, and Miss Esther Meagly. May their tribe increase!

Birding Down Long Island

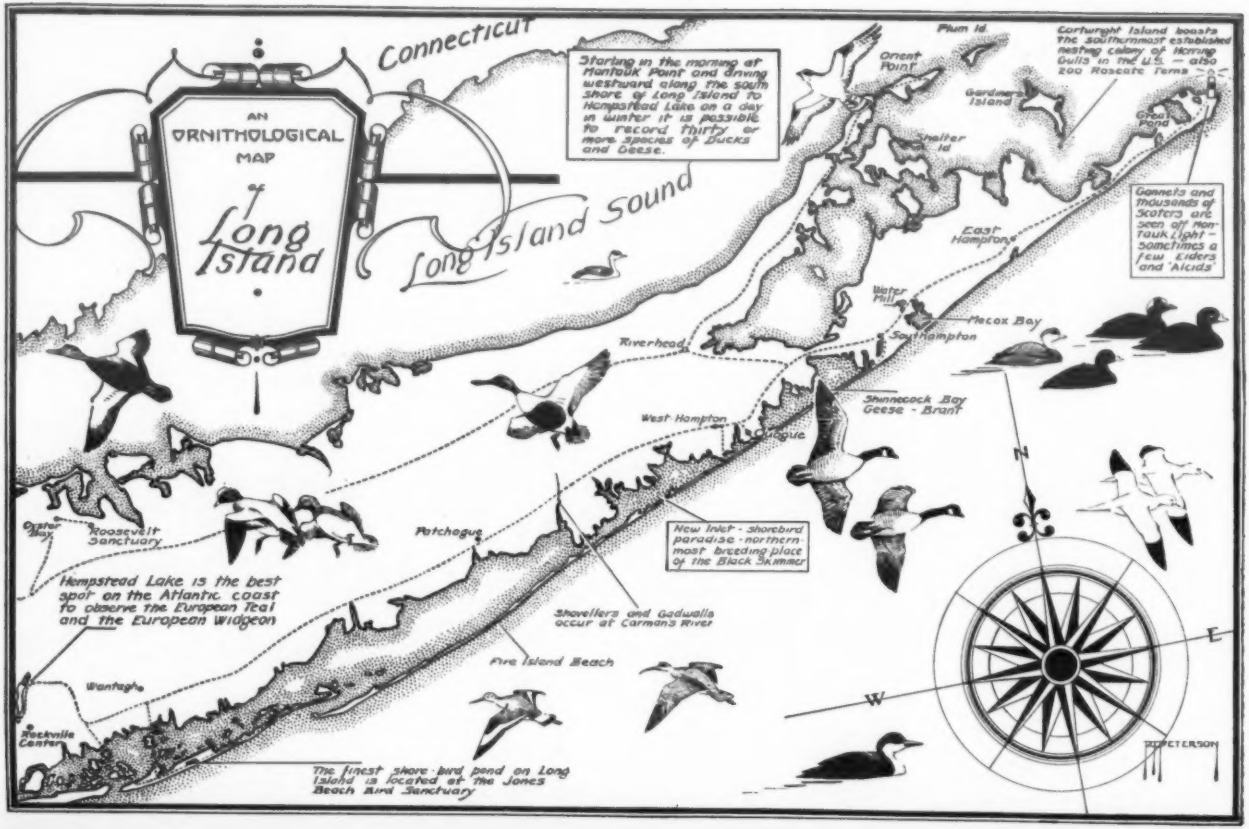
By William Vogt

LONG Islanders are proud people. They sometimes remind one of the Westerner who wandered into the funeral of an old reprobate whose life had been so heinous that no friend or preacher could be found to pronounce a word of eulogy. The undertaker, a conventional soul, was embarrassed, and finally appealed to the small group in attendance. Several people cleared their throats but only the Westerner rose to his feet. "If nobody else wants to make a remark," he offered apologetically, "I'd like to say a word for California."

Had a Long Islander been present, he might well have made the same suggestion about his own home territory. This pride in the whale-shaped, hundred-and-twenty-mile stretch of land goes back nearly three hundred years. In 1670 one Daniel Denton, a magistrate in the town of Jamaica, wrote:

> The Fruits natural to the Island are Mulberries, Posimons, Grapes great and small, Huckelberries, Cramberries, Plums of several sorts, Rosberries and Strawberries, of which last is such abundance in June, that the Fields and Woods are died red: Which the Countrey-people perceiving, instantly arm themselves with bottles of Wine, Cream, and Sugar and in stead of a Coat of Male, everyone takes a Female upon his horse behind him, and so rushing violently into the fields, never leave till they have disrob'd them of their red colours, and turned them into the old habit. . .
>
> There is several Navigable Rivers and Bays . . . ; yea, you shall scarce travel a mile, but you shall meet with one of them whose Christal streams run so swift, that they purge themselves of such stinking mud and filth, which the standing or low paced streams of most brooks and rivers Westward of this Colony leave lying, and are by the Suns exhalation dissipated, the Air corrupted and many Fevers and others distempers occasioned, not incident to this Colony: Neither do the Brooks and Riverets premised, give way to the Frost in Winter, or Drought in Summer, but keep their course throughout the year.
>
> These Rivers are very well furnished with Fish, as Bosse, Sheepsheads, Place, Perch, Trouts, Eels, Turtles and divers others.
>
> For wilde Beasts there is Deer, Bear, Wolves, Foxes, Racoons, Otters, Musquashes and Skunks. Wild Fowl there is great store of, as Turkies, Heath-Hens, Quails, Partridges, Pidgeons, Cranes, Geese of several sorts, Brants, Ducks, Widgeon, Teal, and divers others: There is also the red Bird, with divers sorts of singing birds, whose chirping notes salute the ears of Travellers with an harmonious discord, and in every pond and brook green silken Frogs, who warbling forth their untun'd tunes strive to bear a part in this musick . . .
>
> Upon the South-side of Long-Island in the winter, lie store of Whales and Crampasses, which the inhabitants begin with small boats to make a trade Catching to their no small benefit. Also an innumerable multitude of Seals, which make an excellent oyle: they lie all the Winter upon some broken Marshes and Beaches, or bars of sand before-mentioned, and might be easily got were there some skilful men would undertake it.

It is apparent that Judge Denton was something of a naturalist, and it is still the haunter of the outdoors who expresses the greatest enthusiasm for Long Island. Though the Heath Hen and Wild Turkey are no more, there is an abundance of bird-life. Six thousand Black-crowned Night Herons are known to nest on Long Island. The Least Tern, unknown as a breeder for thirty-five


AN
ORNITHOLOGICAL
MAP
of
Long Island
Connecticut
Long Island Sound
Starting in the morning at Montauk Point and driving westward along the south shore of Long Island to Hempstead Lake on a day in winter it is possible to record thirty or more species of ducks and Geese.
Plum Id.
Orient Point
Gardiners Island
Shelter Id.
Great Pond
Cutchogue Island boasts the southernmost established nesting colony of Herring Gulls in the U.S. — also 200 Roseate Terns
Gannets and thousands of Scoters are seen off Montauk Light — sometimes a few Eiders and 'Alcids'
East Hampton
Water Mill
Mecox Bay
Southampton
Riverhead
West Hampton
Shinnecock Bay Geese - Brant
N
Oyster Bay
Roosevelt Sanctuary
Patchogue
New Inlet - shorebird paradise - northern most breeding place of the Black Skimmer
Hempstead Lake is the best spot on the Atlantic coast to observe the European Teal and the European Widgeon
Shovellers and Gadwalls occur at Carmans River
Fire Island Beach
E
W
Wantagh
Rockville Center
The finest shore bird pond on Long Island is located at the Jones Beach Bird Sanctuary
PETERSON

years, now nests in a number of places. In 1923, Mr. Ludlow Griscom wrote of the Shoveller: ". . . it has never been seen on Long Island by the present day field ornithologist;" yet now it is often seen in a number of places. It should be possible for an active group to find more than 160 species of birds on Long Island in a day, in May, and the total list for the island runs to more than 350!

It will be impossible, within the allotted space, to discuss all the birds of Long Island and, indeed, there would be little point in doing it since many of the species found there are common over much of the East. Rather, the purpose of this article will be to tell of some of the more notable concentration points for birds, at various seasons of the year; directions for reaching them will not be given at length, in most instances, since excellent road-maps are available.

One of the most vaunted advantages of birding on Long Island is that there are no dull seasons. The pleasure one finds in the Island's birds will vary, of course, with the point of view of the observer, and he who possesses the seeing eye for the meanings of Nature that are hidden from the uninitiated, will find most stimulation and pleasure in the region. This is true for all the earth, but it is especially true for an area that comprises, as does Long Island, a striking variety of habitats. On central Long Island, Dr. H. S. Conard, of Grinnell College, has listed seventy-one plant associations (*American Midland Naturalist*, 16, 1935). These, along with the extremely varied topography—marshes, swamps, beaches, islands, and bays—encourage a marked diversity in birds.

The easiest route to Long Island from Manhattan is via the Grand Central-Northern State Parkway, which is reached either from the Tri-Boro Bridge, or Queensboro Bridge and Queens Boulevard. One of the best places for Warblers, however, is Kissena Park, which is readily accessible from Northern Boulevard via 162d Street in Flushing. One should drive to the Park, then skirt its northwestern edge, and park near the cattail swamp. Here the Least Bittern may often be seen, and Warblers in the near-by woods. The largest Warbler lists are to be had near the western end of the Island. Another outstanding place for them is the patch of woods north of Woodmere and northeast of the east-west section of Peninsula Boulevard. (These locations will be immediately apparent upon examining a road-map.) Warblers, however, are not seen at their greatest abundance on Long Island and are scarcely notable except for the numbers of Pine and Prairie Warblers in the pine-barrens.

The south shore, the more interesting birding region, is easily reached from the Northern State Parkway by taking Springfield Boulevard south to Linden Boulevard (a good route from Brooklyn), and then proceeding east to the Southern State Parkway. If one leaves this Parkway at the southern end of Hempstead Lake—the first body of water encountered—and drives north on North Village Avenue to the

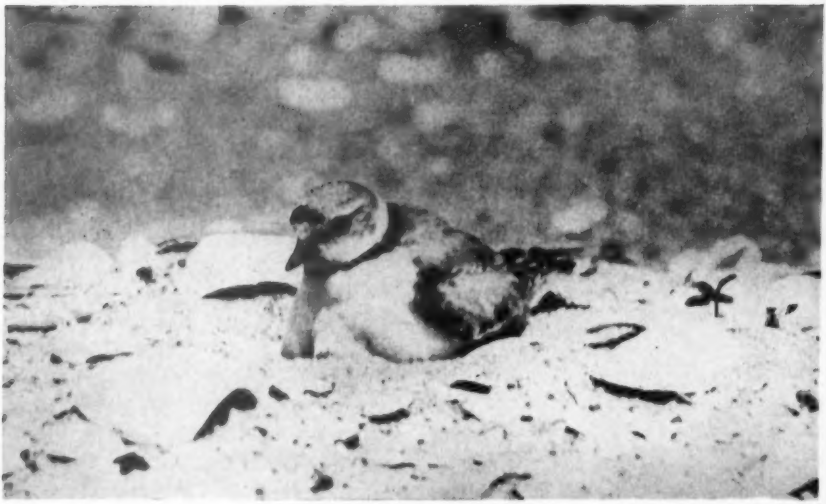


Photo by Allan D. Cruickshank

Piping Plovers are widely distributed along the beaches

parking field, one will be at the northeast edge of Hempstead Lake where, from fall to spring, there is found one of the best concentrations of water-fowl on Long Island. Most of the birds are marsh Ducks, with a scattering of Canvas-backs and Redheads; they usually include a few of the rare European Widgeon and the even rarer European Teal, the male of which may be known, as it sits on the mud, by the absence of the white crescent in front of the wing, and by the white scapulars. Morning is the best time for stopping here since the sun is then at the observer's back. The brush about the head of the lake is an excellent place to find fall migrants.

From Hempstead Lake to the long off-shore barrier island on which is situated Jones Beach State Park—itself well worth a visit as an outstanding example of what intelligent and non-political State administration can accomplish—is a brief journey by way of the Southern State Parkway. The island is dominated by the decorative water tower, and about three miles east of this structure, a few hundred feet north of the highway, lies the pond of the erstwhile Jones Beach State Bird Sanctuary. While it is now operated much less effectively than formerly, it still attracts many birds of a wide variety. For a card of admission to the area, application should be made to the Town Board, Oyster Bay, N. Y.

The fresh-water pond is famous in the annals of New York ornithology. From the four-hundred-acre sanctuary surrounding it have been recorded more than 250 species. From the time Ducks arrive in the fall until they depart in the spring, this lake, richly grown with a favorite food-plant, widgeon grass, is resorted to by water-fowl that at

times reach a total of 10,000 individuals. Ducks and Geese, banded here by the writer, have been shot in twenty States and Canadian Provinces. Black Ducks preponderate, with Pintails usually second in number; it is not unusual to see twelve or fifteen species of Ducks and Geese on the pond at one time, and here one encounters the same rarities as at Hempstead Lake. When the water freezes, numbers are, of course, sharply reduced. Both Blue and Snow Geese have been recorded here.

In the spring the sands about the pond are a favorite breeding-place for Piping Plover, and in near-by marshes numbers of Black, Clapper, and Virginia Rails, and Sharp-tailed and Seaside Sparrows. In the bird-houses about the pond are found the only Tree Swallows known to nest in Nassau County.

While the spring flight of shore-birds is usually rewarding here, with the peak shortly before Memorial Day, late July and early August are the periods when the waders are most numerous. On the shores of this pond the writer has seen, in one day, twenty-three species of shore-birds. It should be visited especially after a late summer or early fall storm. Many strangers have been carried in by winds from the south and there have been days on Jones Beach when, ornithologically speaking, it seemed as though anything might happen. Egrets are regular and abundant here in late summer; Arkansas Kingbirds, Mockingbirds, and Lark Sparrows were recorded every fall an ornithologist was in residence, and the Sanctuary's honor roll included such notable stragglers as the Purple Gallinule and Yellow-headed Blackbird. Out of all the year, August is probably the most interesting month for non-breeding birds.

If Black Skimmers have not been seen on the pond, there is an excellent chance of observing them near the village of Oak Beach, which is the second settlement to the east of the Sanctuary. Here, except in winter, one must pay for parking one's car; striking northwest, one finds, at the edge of the Bay, some of the best shore-bird flats in the Northeast. (As a generality, birding is better on the bay side of the barrier beaches than in the middle or on the ocean side. Despite this fact, however, the ocean side should not be neglected since from it one often sees migrating Cormorants, Gannets, and Shearwaters, and along Jones Beach one may tramp seventeen miles of beach, much of which is as unspoiled as in the days of Daniel Denton.) Should the Skimmers be missed along this island, they may often be seen off the Amityville water-front, near which a breeding colony is protected as a sanctuary by the Audubon Asso ciation.

Along the Jones Beach highway there are a number of Tern colonies, safely protected from any considerable human disturbance by the no-parking regulations enforced by perfectly hard-boiled and equally courteous State troopers. The birds may be seen almost anywhere, and, of course, should not be interfered with in their nesting groups.

The usual route eastward from

Jones Beach is along Highway 27 to Carman's River (though a fall stop at Heckscher State Park may reward one with astonishing concourses of roosting Blackbirds in the evening); Carman's River, at South Haven, presents the finest concentration of fresh-water Ducks on Long Island, if not in the Northeast. A few yards west of the river a dirt road leaves the concrete, and it is here the car should be left. The Ducks must be viewed through a high fence, which crosses the river. Here, as far as one can see up-stream, and much closer than Ducks may usually be seen in the Northeast, are hundreds upon hundreds of Pintails, Baldpates, European Widgeon, Black Ducks, Mallards, Redheads, Canvas-backs, Canada Geese, Wood Ducks, Coots, Ring-necks, Gadwalls, and Shovellers, among others; and here in the winter may often be seen a Bald Eagle, perched in one of the fringing trees. Year after year bird students continue to press their noses to this fence, for all the world like hungry men before a restaurant window. What lies around the river's bend? This is a perennial question, and it is always the hope of observers that, sometime, they may be fortunate enough to discover.

The next stop, at almost any season, is New Inlet, as it is known to local bird students, or Moriches Inlet, as it is given on the maps. This is reached by passing south through Westhampton Beach to the dune road, and traveling *west* on this highway to its end. From this point to the inlet is merely a matter of a few hundred interesting yards. Throughout the winter, in the grasses, the Ipswich Sparrow may usually be seen; and the flats about the inlet, in the spring and fall, attract numbers of shore-birds and, for some unknown reason, unusual species. This, for example, is the best place to look for Godwits; both the Avocet and Oyster-catcher have been seen here. Skimmers may also often be watched as, with their long bills, they shear the waters of the adjacent bay. Aside from the birds of this tract, it has a wild beauty that is, again, reminiscent of the old Long Island, especially when tides pile through the inlet after a tropical storm, when one may hope, without too far trespassing on unreason, to find a Brown Pelican or Man-o'-war-bird.

Through the colder months the ride along the dune road from New Inlet to Southampton is often richly rewarding. The ditches along the road are favorite feeding-places for Great Blue Herons, the wild Mute Swans fly back and forth across Shinnecock Bay, Canada Geese and Brant may often be seen, and with them flocks of Scaup, Golden-eyes and Old-squaws.

The small pond, just north of the railroad station at Watermill, is often visited by Ruddy Ducks, Canvas-backs, and Redheads, as is Mecox Bay to the south; the sandy borders of the latter are often productive of interesting shore-birds in season. Diving Ducks are also seen on Georgica Pond, and the near-by potato-fields around Wainscott are sometimes visited by Golden and Upland Plovers, Snowy Owls, and vast flocks of Snow Buntings; this last species, along with Horned

A recent survey shows that 6000 Black-crowned Night Herons (above) nest on Long Island; 300 Least Terns (below)

Photos b Allan D. Cruickshan

Larks and occasional Longspurs, may be found almost anywhere in back of the ocean dunes, and on many plowed fields toward the center of the Island.

Great Pond, near Montauk, was once a famous diving Duck wintering ground, and many a barrel of Redheads was shipped from here to the New York markets in the pre-protection days. Now there is no market gunning nor, for the most part, Ducks, since Great Pond has been turned into a glorified yacht basin through a connection dredged to Long Island Sound. However, there is a rocky breakwater at the northeast quadrant of Great Pond, where, at the risk of a tumble into the sea, one may scramble over slippery rocks and, during the winter, find the beautiful little Purple Sandpiper. Until familiarity has dulled appreciation of this bird, it is always worth a hazardous climb to watch it delicately picking its food from the rocks and kelp, barely above the lapping waves.

All my life I have lived on, or near, Long Island, yet I never fail to be stirred by a visit to Montauk Point. Rearing its great bluff out of the open sea, looking toward the cliffs of Block Island—sometimes visible on a clear day—Montauk has a wild and wide expansiveness that not even the State Park has been able to tame. Whether one approaches over the rolling downs through the golden light of summer, the roaring flames of autumn, or the cold gray of winter; or whether one fights for breath in the gales that lash about the lighthouse; or crouches in the lee of the bluff, with icicles dripping down one's neck as one searches for King Eiders, Dovekies, or the occasional Harlequin, Montauk is always a place of impressive beauty and, at the season bird students visit it, almost unchallenged solitude. There may be a dozen people on the point; but they are unimportant. The cliffs and sky and sea establish easy domination.

Montauk is especially interesting to the bird-watcher since it is here that North meets South. Here are found, in the winter, vast beds of Scoters. They whirl and twist above the seas, now like whisps of smoke, now like a vast sea serpent. Here the members of the Auk family find their southernmost coastal limit. Here the Kittiwake whips about the base of the lighthouse, Horned and Holboell's Grebes and Loons bounce in the surf, and the white-winged Gulls swoop by almost at one's feet. Over the dunes back of the Point is one of the best places to see wintering Rough-legged Hawks.

Montauk is most frequently visited in the winter months, but the October Convention field-trips of the Audubon Association have shown that earlier trips are well worth while. The memory of last year's visit to the Point, few of the participants will ever cease to enjoy. In a welter of color that would have excited Van Gogh, hundreds of Cory's Shearwaters milled about a short distance from the land under a virtual shower of plunging Gannets.

Relatively little bird-study has been carried on here in the nesting season and quantitative surveys at that period should prove exceedingly interesting. The floral studies

of the Point by Mr. Norman Taylor would provide a useful foundation.

Gardiner's Island, between Montauk and Orient Points, is largely *terra incognita* for the present generation of active field-men since it has been monopolized as a shooting-preserve. Its huge Osprey colony, with many of the nests on the ground, is famous, and its primeval woodlands should offer important territory for a breeding-bird census, were it possible for an ornithologist to study them.

Orient Point, the northeastern tip of Long Island, is well worth a visit in the summer, because of its large population of breeding Ospreys, which nest within a few yards of passing automobiles. Here, too, protected by the Long Island State Park Commission, is a sizable Common Tern colony.

The most direct route back to New York from Orient Point is via Highway 25 to the Northern State Parkway. A side trip to the Roosevelt Memorial Sanctuary at Oyster Bay (reached by proceeding east on East Main Street from the center of the village) is well worth while since on this Sanctuary has been built up one of the heaviest densities of breeding land-birds known. The area is a triumph of song-bird management.

Just west of Oyster Bay is perhaps the best concentration point for fresh-water swamp birds on Long Island—Mill Neck. Here the Pied-billed Grebe calls the cows throughout the spring, the Least Bittern coos occasionally its inept imitation, Florida Gallinules cackle, Red-wings and Long-billed Marsh Wrens shower the listener with their liquid music, and the American Bittern's bass-viol underscores the cello pizzicato of the bull-frogs. Unless one is driven by the idea that anything less than two hundred miles of birds a day is *infra dig.* for the bird student, this

The Baldpate is regular at Carman's River

Photo by Paul Fair

is one of the most satisfying and delightful spots on Long Island. One walks into its heart along the railroad embankment from the Mill Neck station, and one always bears in mind the fact that the embankment is also used by trains!

At various places between Plainedge and Floral Park may be seen remnants of the Hempstead Plains. Of them Daniel Denton wrote:

> Towards the middle of Long-Island lyeth a plain sixteen miles long and four broad, upon which plain grows very fine grass, that makes exceeding good Hay, and is very good pasture for sheep or other Cattel; where you shall find neither stick nor stone to hinder the Horse heels, or endanger them in their Races. . .

The races are still held at the Nassau County Fair Grounds, but only remnants may be found of this prairie. It is especially interesting to the bird student, however, as the nesting-place of a typical prairie bird association—the Grasshopper, Vesper and Savannah Sparrows, Meadowlarks, Bobolinks, and Upland Plovers. Dr. Stanley A. Cain published, in the *American Midland Naturalist* for May, 1937, an ecological study of the Plains, which are dominated by the same beard grass as some of the prairies of the West—*Andropogon scoparius*. A characteristic patch of this plain, with its birds, is readily accessible between the Aviation Country Club and the railroad, just west of North Jerusalem Avenue, south of Hicksville.

It has not been possible, within the limited number of pages available, to mention more than a fraction of the exciting Long Island birds, and there are many other concentration points that are worth investigation. However, most of the outstanding places, and indicator species, have been listed. Those who desire further information can usually secure it at meetings of the Linnaean Society of New York, which are held at the American Museum of Natural History on the evenings of the second and fourth Tuesday of each month, from October to May, inclusive. Visitors are always welcome.

It is to be hoped that those who use this guide will not be content merely to list the birds they encounter. This has been done thousands of times, from the day of Daniel Denton down to the present; and many published lists are available. Ludlow Griscom's *Birds of the New York City Region*, though somewhat out-of-date, is still useful. The writer's *Preliminary List of the Birds of Jones Beach*, comprising some 270 species, may be had from the Secretary of the Linnaean Society.

But there is still vastly more unknown than known about Long Island birds. Where, exactly, do they occur in relation to geography and vegetation, and in what numbers? What are their nesting-dates and incubation periods? When do they start and stop singing? How are they being influenced by man's activities? Are they increasing or decreasing? What can be done for their conservation? These, and dozens of other questions, can be answered at least in part by the individual who spends his week-ends birding down Long Island. And it is the observer whose mind is filled with such queries who is most likely to see beneath a surface that otherwise may, in time, seem to grow all too commonplace and monotonous.

BIRDING DOWN LONG ISLAND

Photo by W. L. Dawson

Marbled Godwits

One of the Island's rarest visitors

Photo by Allan D. Cruickshank

Lesser Scaup {left} are abundant on Long Island's bays. Canvas-backs {below} are most often seen toward the eastern end of the Island.

Photo by Paul Fair

Photo by Allan D. Cruickshank

Photo by Paul Fair

Mute Swans {upper left} have become wild on Long Island. There are now hundreds. Ruddy Ducks {upper right} are often seen on Water Mill Pond. Coots {below} winter at Brookhaven.

Photo by R. T. Peterson

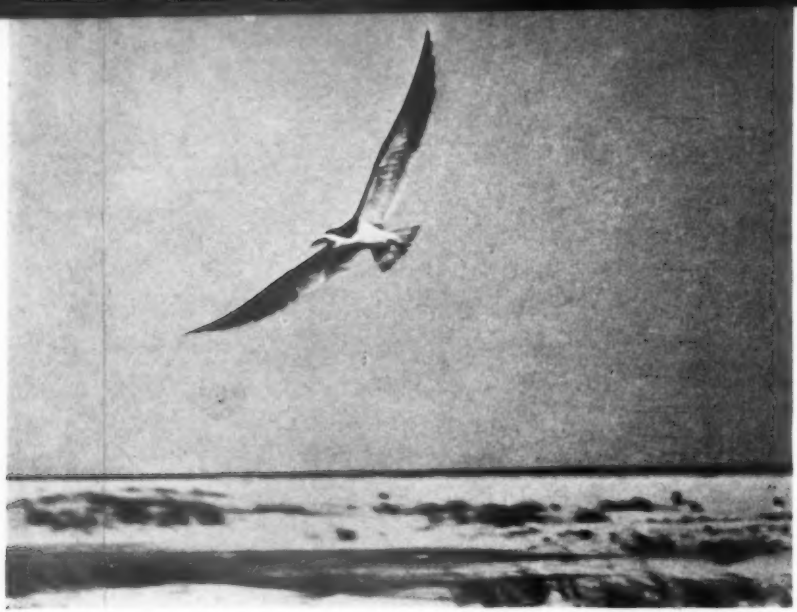


Photo by Wm. Vogt

The Black Skimmer {above} now breeds on Long Island. Bonaparte's Gulls {right} gather in large numbers off Montauk in migration. The Ring-billed Gull {below} can be seen the year 'round at Jones Beach Pond.

Photo by
Allan D. Cruickshan

Photo by R. T. Peterson

Bird-Lore

A Bi-Monthly Magazine devoted to the Study and Protection of Birds and Mammals

Edited by WILLIAM VOGT
Contributing Editor, FRANK M. CHAPMAN

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BIRD-LORE'S MOTTO
A Bird in the Bush Is Worth Two in the Hand

THE 1938 meeting of the American Ornithologists' Union, which will be held in Washington, D. C., the week of October 17, should be attended, if possible, by everyone who is interested in birds. Information concerning dates, programs, field-trips, and headquarters may be had from Dr. Lawrence E. Hicks, Ohio State University, Columbus, Ohio.

It is probable that no city in the country is so well represented in the A. O. U. as is Washington, for here are concentrated the U. S. National Museum, the U. S. Biological Survey, the U. S. National Park Service, the U. S. Forest Service, and a number of other organizations to a greater or lesser degree concerned with the study and protection of birds. These groups alone would guarantee a substantial attendance at the meeting, and other members and visitors are certain to come from many parts of the country.

It is difficult to convey, to anyone who has never been at an A. O. U. meeting, the pleasure and inspiration one gets from such a gathering. It invariably includes a liberal seasoning of the outstanding ornithologists in the United States and Canada, and the papers presented place one in touch with the most progressive ornithological thought. No matter what phase of bird study one is interested in, it is almost certain to be discussed at the meeting. The finest American motion pictures of birds are shown here, and from time to time there are presented distinguished collections of bird painting and photography.

Lest, to those unfamiliar with A. O. U. meetings, the above paragraph has made them sound oppressively scholarly and highbrow, it should be said that many papers, including some of the best, are read by amateur ornithologists and that those who follow the study of birds as a hobby are as welcome as is the most authoritative of avian taxonomists. These are not entirely serious affairs, by any means, and the friendliness that characterizes most bird students is much in evidence at A. O. U. meetings, whether one is a newcomer or has been initiated into the most convivial of inner circles.

The principal function of the ornithologists with headquarters in Washington is conservation, and their presence should give the meeting especial significance. The A. O. U. was progenitor of the U. S. Biological Survey, and out of the early researches of this body has grown a Federal bird-conservation program. More and more the Biological Survey has been driven to 'practical' affairs, and a much smaller proportion of its budget is available for research than was applied in the past. There are many informed Americans who would welcome an expansion of the Survey's research program, and who feel the Bureau could function even more effectively if it were permitted more extensive investigations. For example, a recent court case in which the defendants were accused of baiting, devoted much consideration to the problem of how long a Duck can remember a place to eat, and how long the bird will return to a corned area after feeding has stopped. There seems to be no clear evidence on the mnemonic capacities of Ducks, and it is dubious whether the jury was impressed by the evidence; at least, the Government lost the case. The Bureau has spent millions of dollars on its water-fowl restoration program, and has every right to be proud of the results. It is, however, entirely likely it could have been even more effective were there a more substantial research foundation. It is a striking fact that, though Ducks and Geese are our most important game-birds, and millions of dollars are each year spent in hunting them, their life histories are but superficially known. It may be that the A. O. U. and U. S. B. S. will, at this meeting, further consolidate their old relationship, that the ornithologists may help the conservationists to extend their research program, and that the conservationists may inspire the ornithologists to concern themselves more actively with national conservation problems.

THIRTY-FOURTH ANNUAL CONVENTION OFFERS INTERESTING PROGRAMS

The Thirty-fourth Annual Convention of the National Association of Audubon Societies will open Friday evening, October 21, 1938, at 8 P.M. with the Third Reunion Dinner of the Audubon Nature Camp in the Flying Bird Hall of the American Museum of Natural History, New York City. This is an informal event at which all members and friends of the Association, as well as those who have been at the Camp, are cordially welcome. There will be colored motion pictures and lantern slides of Camp scenes of the 1938 season. Price per plate is $1.50. Camp alumni will be seated in groups by years and sessions of attendance. All seats should be purchased in advance.

Field-trip to Cape May Point, N. J., starting by bus at 10 A.M., Saturday, October 22, from the 77th Street entrance of the American Museum, returning Sunday evening, October 23. This trip will be led by members of the Association's staff and cost per person will be $7.50, including round-trip transportation, New York City to Cape May Point, with three meals and lodging at Cape May. Those taking this trip should be prepared to purchase their own Saturday luncheon and Sunday supper en route. Tickets must be purchased in advance and presented at the door of the bus.

Field-trip to Montauk Point, Long Island, starting by bus at 6 A.M., Sunday, October 23, from the 77th Street entrance of the American Museum, returning the same evening. This trip will be led by members of the Association's staff. Cost per person, $3, including picnic lunch and round-trip transportation, New York City to Montauk Point. Those taking this trip should be prepared to purchase their own supper en route. Tickets must be purchased in advance and presented at the door of the bus.

MONDAY, OCTOBER 24

In the Duplex Hall, Rooms 201–202, Educational Wing, American Museum of Natural History, New York City.

10.30 A.M. to 12 M.

Alden H. Hadley: "Report on Three Years' Educational Work in Florida." 15 min.

C. Russell Mason: "Activities of the Florida Audubon Society." 20 min.

Robert P. Allen: "The Survival Problem of the Florida Crane." Illustrated. 20 min.

James M. Tanner: "Report as Audubon Fellow on Ivory-billed Woodpecker Research Project." 20 min.

Margaret L. Bodine: Colored Motion Pictures of Familiar Birds, Reel I. 15 min.

12 M.

Invitation luncheon for accredited delegates of affiliated clubs. In the Flying Bird Hall of the American Museum.

2 P.M. to 4.30 P.M.

Patricia Hahn: "Educational Program of the Audubon Association." 15 min.

Bayard H. Christy: "The Artistic Talent of John James Audubon." Illustrated with lantern-slide reproductions of Elephant Folio prints. 30 min.

A. A. Nichol: "Report as Audubon Fellow on Desert Bighorn Sheep Research Project." 20 min.

Margaret L. Bodine: Colored Motion Pictures of Familiar Birds, Reel II. 15 min.

Dr. Ralph T. King: "Is It Wise Policy to Introduce Exotic Game-Birds?" 20 min.

Alexander Sprunt, Jr.: "The Survival Problem of the Roseate Spoonbill." Illustrated. 30 min.

5 to 7 P.M.

House-warming at the new home of the National Association of Audubon Societies at 1006 Fifth Avenue, between 81st and 82d Streets. All members and friends of the Association will be welcome.

TUESDAY, OCTOBER 25

9.30 A.M. to 12.30 P.M. In the Duplex Hall, American Museum of Natural History.

Annual business meeting, including reports of progress and program by at least ten members of the Association's staff.

2.30 to 5 P.M. Roosevelt Memorial Hall, American Museum.

Prof. J. R. Dymond of the Royal Ontario Museum of Zoölogy: "Canadian Conservation Problems." 30 min.

Dr. T. Gilbert Pearson: "Progress of the International Bird Protective Work." Illustrated. 20 min.

Margaret L. Bodine: Colored Motion Pictures of Familiar Birds, Reel III. 15 min.

Dr. Ira N. Gabrielson, Chief, U. S. Biological Survey: "Wildlife Management as Practiced by the Biological Survey." 30 min.

J. R. Pemberton of Los Angeles: "The Home Life of the Nearly Extinct California Condor." Illustrated with colored motion pictures. 30 min.

Tuesday evening, beginning promptly at 7.30 P.M., the Annual Dinner of the Association will be held in the Ballroom of the Hotel Roosevelt, 46th Street and Madison Avenue, New York City. Reception from 7 P.M. Cost per plate $2.50. All seats reserved. Tickets should be purchased in advance. Principal feature of entertainment will be the showing of colored motion pictures of beautiful birds of the southern Audubon sanctuaries. These are new pictures taken in 1938 by Dr. W. E. Wrather, Dallas, Texas, and Mr. John H. Storer, of Waltham, Mass. Some are in slow motion. The dinner program should be concluded by 10.30 P.M.—J. H. B.

THE BASIC BIRD LIBRARY

Bird students who are familiar with publications on birds are often impressed by the poor quality of the bird-book collections in public libraries. This shortcoming is scarcely to be wondered at, of course, since librarians cannot be expected to have a complete knowledge of publications in all specialized fields. With the thought that expert advice in the selection of bird-books might be helpful to librarians, the National Association of Audubon Societies—after consultation with ornithologists in various parts of the country—has prepared the following list.

It is certain that some people will feel that other works ought to have been included, and that some of these might better have been omitted. Making a book-list, like making an anthology, cannot possibly satisfy everyone. Important works, such as Alfred Newton's *A Dictionary of Birds* and Robert Cushman Murphy's *Oceanic Birds of South America*, which are desiderata for every bird library, had to be omitted because they are out of print. An attempt has been made to supply a list of books, interesting and useful to adults and older boys and girls, covering the various aspects of bird-study, such as identification, local distribution, migration, biology, ecology, poetry and other literature, conservation, life histories, and behavior. The list as it stands is the result of recommendations by a number of people who are representative of those who know most thoroughly the English language literature on birds.

Can Your Library Afford Only Ten Bird-Books?

If so, the National Association of Audubon Societies recommends the following:

1. Allen, G. M.: Birds and Their Attributes. 1925. Boston: Marshall Jones Co. $3.50.
2. Bailey, F. M.: Handbook of Birds of the Western United States. 1935. Boston: Houghton Mifflin Co. $6.00. For the West.
   Chapman, F. M.: Handbook of Birds of Eastern North America. 1937. New York: Appleton-Century Co. $5.00. For the East.
3. Herrick, F. H.: Wild Birds at Home. 1935. New York: Appleton-Century Co. $4.00.
4. National Geographic Society: The Book of Birds. 2 vols. 1937. Washington, D. C.: National Geographic Society. $5.00.
5. Nicholson, E. M.: How Birds Live. 1927. London: Norgate, Ltd. $1.50.
6. Peterson, R. T.: A Field Guide to the Birds. 1934. Boston: Houghton Mifflin Co. $2.75. For the East.
   Hoffman, Ralph: Birds of the Pacific States. 1927. Boston: Houghton Mifflin Co. $5.00. For the West.
7. Priestley, Mary: A Book of Birds. New York: The Macmillan Co. $2.50.
8. Thomson, A. L.: Bird Migration. 1936. London: H. F. & G. Witherby, Ltd. 5 shillings.
9. The State bird-book from the nearest State in the following list:
   *Bailey, F. M.: Birds of New Mexico. 1928.
   Dawson, W. L.: The Birds of California. 4 vols. 1923. Eagle Rock, California: W. Lee Chambers. $19.00.
   Eaton, E. H.: The Birds of New York. 2 vols.

1910–14. $6.00, transportation extra. N. Y. State Museum, Albany, N. Y.

Forbush, E. H.: Birds of Massachusetts and Other New England States. 1929. 3 vols. $15.00.

Howell, A. H.: Florida Bird Life. 1932. New York: National Association of Audubon Societies. $3.00.

Roberts, T. S.: The Birds of Minnesota. 2 vols. 1936. Minneapolis: University of Minnesota Press. $15.00. (Libraries that cannot afford this set—which is well worth the price—will find useful *Bird Portraits in Color*, $3.50. This is a collection of all the color plates from the two volumes, with a page of general text for each plate.)

Stone, W.: Bird Studies at Old Cape May. (New Jersey.) 2 vols. 1937. Philadelphia: Academy of Natural Sciences. $6.50 delivered.

Taverner, P. A.: Birds of Canada. 1938. Philadelphia: David McKay. $4.00.

10. The local list—county, city, or state—for the region nearest the library. The name of this can be obtained from the State university or museum.

Can Your Library Afford Twenty-five Bird-Books?

If so, we recommend the following additional volumes listed below:

11. Allen, A. A.: The Book of Bird Life. 1930. New York: D. Van Nostrand & Co. $3.50.
12. American Ornithologists' Union: Fifty Years' Progress of American Ornithology. 1933. Arlington, Virginia: W. L. McAtee, 3200 Twenty-second Street, Arlington, Va. $1.00.
13. Berg, Bengt: To Africa with the Migratory Birds. 1930. New York: G. P. Putnam & Co. $5.00.
14. Chapman, F. M.: Autobiography of a Bird Lover. 1933. New York: Appleton-Century Co. $3.75.
15. Chapman, F. M.: Camps and Cruises of an Ornithologist. 1908. New York: Appleton-Century Co. $4.00.
16. Howard, Eliot: The Nature of a Bird's World. 1935. New York: The Macmillan Co. $2.50.
17. Kirkman, F. B.: Bird Behaviour. 1937. New York: T. Nelson & Sons, Ltd. $3.00.
18. Leopold, Aldo: Game Management. 1933. New York: Chas. Scribner's Sons. $5.00.
19. May, John B.: The Hawks of North America. 1935. New York: National Association of Audubon Societies. $1.25.
20. Nice, M. M.: Studies in the Life History of the Song Sparrow, Part I. 1937. New York: Linnaean Society of New York, care American Museum of Natural History. $1.50.
21. Pearson, T. G.: Adventures in Bird Protection. 1937. New York: Appleton-Century Co. $3.50.
22. Phillips, J. C. and Lincoln, F. C.: American Waterfowl. 1930. Boston: Houghton Mifflin Co. $4.50.
23. Rittenhouse, J. B. and Scollard, C.: Bird-Lovers' Anthology. (Poetry.) 1930. Boston: Houghton Mifflin Co. $2.00.
24. Saunders, A. A.: A Guide to Bird Songs. 1935. New York: Appleton-Century Co. $2.50.
25. Stoddard, H. L.: The Bobwhite Quail. 1931. New York: Chas. Scribner's Sons. $6.00.

**Bent, A. C.: Life Histories of North American Birds. Birds of Prey, Part II. Bull. 170. 1938. Washington, D. C.: Superintendent of Documents. 60 cts.

*These books are out of print, but the National Association of Audubon Societies, 1006 Fifth Avenue, New York, N. Y., can usually secure second-hand copies, or they may be had through dealers or trade journals.

**Because of the difficulty of securing most volumes of this excellent series, it is not included among the 25 recommended books. Every library, however, should purchase forthcoming volumes as they appear; their price, at the office of the Superintendent of Documents, is extremely low. Although now out of print, most of the early volumes in this series, from the diving birds to the Hawks, may be obtained at rare-book prices.

Photography Review

By Henry Clay Gipson

(So many requests for photographic information were included in the questionnaires recently returned that we have initiated this *Photography Review* in which Mr. Gipson will describe new materials and equipment of interest to nature photographers. Such listings are not to be interpreted, however, as endorsements. From time to time we shall also publish, as requested, articles on the technique of nature photography, by specialists in the field.—Ed.)

Birdmen who have never mastered the art of making proper photographic exposures will find an answer to their problems in the new Super Kodak Six-20 Camera which automatically adjusts itself for proper exposures. It is only necessary for the camera man to focus on a scene, select a suitable shutter speed, and release the shutter. A photo-electric cell actuates a galvanometer in the lens housing, which automatically keeps the diaphragm at an aperture that will produce a properly exposed negative for the chosen shutter speed.

The camera also offers a built-in range

The Super Kodak Six-20

finder of new design, the chief advantage of which is the fact that a single eyepiece is used for both view-finder and range-finder sight.

A further fool-proof feature of the camera is the device which prevents double exposures by preventing a resetting of the shutter until the film-winding lever has been operated. When an exposure is made a red warning signal dot appears beside the shutter speed scale. This dot disappears when the film is wound and the shutter cocked ready for another exposure.

Shutter speeds ranging from 1 to $\frac{1}{100}$ of a second are offered. The lens is a Kodak anastigmat with a speed rating of f3.5, which can be stopped down to f.22 by manual control that makes it possible to disconnect the automatic photo cell gearing and select over or under exposures for special effects the user may desire.

Fieldmen who follow birds from the sunlight into the shade and who find difficulty in keeping their cameras properly set on cloudy days, when it is intermittently bright and dark, will find that this camera will permit them to keep their attention almost completely on their bird. The price of the Super Kodak Six-20 is $225.00.

The Leica camera, long a favorite for compactness and accuracy, now becomes an even more useful instrument for the photography of wild life by virtue of the 400mm. Telyt lens which is now available. This lens is focused by a mirror reflex system which gives ground-glass focusing up to the moment of exposure. When this lens is mounted on the Leica Camera Gun we have an instrument which can be kept focused on the most difficult subjects in order that they may be snapped at the opportune moment.

Copies of a new speed rating chart for the Weston Photo-Electric Meter are now available at all photo dealers. The chart not only lists the new films but also contains some revisions of the old ratings.

Agfa Ansco announces a new high-speed film with extremely fine grain. This is the New Type Isopan which replaces the old Isopan film. It is available in 35mm. and all standard sizes. The film is over twice as fast as the old emulsion and possesses finer grain.

The Leica Gun

Help!

More than 600 of the questionnaires sent to BIRD-LORE readers have been returned, more or less completely answered, but the analysis of them has proved so complicated that it is not yet possible to make a report. The results of the questionnaire will be discussed in detail in the November-December issue.

SUMMARY OF BREEDING-BIRD CENSUS

Because Americans are most familiar with densities in terms of pairs per acre or 100 acres, the latter designation has been retained in the body of each census report. The following table converts these figures into adult birds per 100 acres, a more convenient term which enables one to include figures for unmated birds. The latter, along with nesting birds, are given in column 4. Those birds nesting inside a tract but feeding outside it are listed in column 5 under 'A.' Other birds which visited the area for food, water, etc., and for which definite figures are presented are listed in column 6 under 'B.' 100 acres = 40.47 hectares. In a few cases data were supplied by investigator's letters.

General Habitat Type	Area in Acres	Man-Hours Afield	Adults Per 100 Acres	+A	+B	Total Density	1937	Investigator	State or Prov.
Short-grass plains	25	35	172	—	48	220	—	P. F. Allen	Tex.
Sand-dunes	25	24	160	—	—	160	—	M. B. Skaggs	Ohio
Marsh and swamp shrubs	15	—	1040	—	—	1040	600	J. W. Aldrich	Ohio
Marsh	10.5	—	1010	—	—	1010	342		
Swamp shrubs	4.5	—	1060	—	—	1060	1072		
Cat-tail swamp	40	160	1845	40	366	2251	1680[7]	Sialis Bird Club	N. Y.
Lightly wooded, swamp-margined island	46	147	530	50	(690)[1]	(1470)	—	Bartlett, etc.	N. Y.
Balsam-black ash bog	8.3	40	528	96	116	740	—	W. P. Smith	Vt.
Tamarack bog	2.8	25	928	238	358	1524	—	W. P. Smith	Vt.
Open and scrubby fields	31	39	290	—	—	290	—	C. H. Knight	Ohio
Open fields, brambles, etc.	20	—	690	—	—	690	720	Isabelle Hellwig	Ohio
Open field	15	—	720	—	—	720	—		
Small swamp	5	—	600	—	—	600	—		
Open field, beginning of trees	42	48	324	—	—	324	280	P. N. Moulthrop	Ohio
Open fields and thorn scrub	61	—	334	—	—	334	—	A. B. Fuller and B. P. Bole, Jr.	Ohio
Open fields	43	—	340	—	—	340	—		
Thorn scrub	18	—	100	—	—	100	—		
Bogs and ponds	5.6	—	786	—	—	786	—		
Isolated groves	2.4	—	250	—	—	250	—		
Open willows, dense hackberry-ash assn.	15	43	1558	67	77	1702	760+	L. Irby Davis	Tex.
Young beech–maple–hemlock forest	39	30	440	—	—	440	—	Walters, Bole and Moulthrop	Ohio
Red maple–yellow birch bog forest	22.8	12	254	—	—	254	132[2]	J. W. Aldrich	Ohio
Bottomland-oak-hickory-elm	34	57	370	36	3	409	267[7]	Tulsa Aud. Soc.	Okla.
Sugar maple forest (protected)	7.9	50	252	126	—	378	—	C. A. Dambach	Ohio
Sugar maple forest (grazed)	13.6		86.4	—	—	86.4	—		
Second-growth hardwood	15	60	1690	++	—	1690[8]	1650	Elton Fawks	Ill.
Second-growth ridge forest	100	56	530	—	—	530	536	Hicks, Chapman	Ohio
Pine barrens and cedar bog	76	100	200	—	—	200	—	David Fables	N. J.
Upland pine–hemlock–red maple	75	150	348	—	—	344[3]	270	B. P. Bole, Jr.	Ohio
Upland hickory–oak; grass bottomland	45	71	200	—	50	250	124[7]	A. H. Claugus	Ohio
Conifers and hardwoods	50	41	584	16	40	640	216[7]	Cleghorn, Molson	Que.
Wooded slope and ridge	39.9	54	545	15	25	585	610	J. J. Hickey	N. Y.
Climax red and white spruce forest	30	200	533.3	13.3	—	566.6	492[4]	Cadbury and Cruickshank	Me.
Climax beech–maple forest	65	30	360	—	—	360	378[5]	Walters, Williams	Ohio
Canyon: trees and brush on mt. stream	40	60	450	—	35	485	430[6]	Graham, Stoner	Calif.
Wooded ravine	25.5	40	380	—	—	380	—	J. Corbe	Ohio
Country estate	15	++	1120	—	—	1120	1240	Kendeigh, Odum and Higgins	Ohio
City park	140	—	258	1.4	—	259.4	142[7]	H. Karsch, Jr.	N. Y.

[1] "To be considered not as the average per day but as representing what is probably a maximum."—Guy Bartlett. [2] 176 in 1933; 350 in 1934 (high water table); 150 in 1936. [3] 226 in 1935; 334 in 1936; 270 in 1937. [4] 500 in 1936. [5] 480 in 1933; 534 in 1934; 412 in 1935; 350 in 1936. [6] 1937 total did not include visiting birds. [7] More efficient coverage in 1938 reported. [8] This remarkable density is recognized by Mr. Fawks as being "awfully high"; he attributes it to a marked edge effect, to an abundance of food and to an absence of predatory cats and dogs.

BIRD-LORE'S SECOND BREEDING-BIRD CENSUS

Edited by Joseph J. Hickey

The second Breeding-Bird Census follows its predecessor in a rich variety of habitats scattered over half a continent from Quebec to Texas and from California to Maine. Once again the reports emanate largely from Ohio, as it becomes increasingly obvious that the survey of local bird-life by the Cleveland Bird Club is by far the most comprehensive ever attempted—and actually being carried out. To this year's group of reports there is also added the experience of repetition which, in most studies, affords interesting comparison with the results of 1937 and which brings the densities of four others to more nearly correct figures.

Several interesting environmental types appear to have been censused for the first time on an acreage basis: sand-dunes in Ohio by M. B. Skaggs, two Vermont bogs by W. P. Smith, and the pine barrens of New Jersey by David Fables. Two censuses by C. A. Dambach show the actual effect of grazing in a sugar maple forest. Although investigations of this latter sort are obviously important, they are remarkably rare in ornithology. Some extensive studies of this nature have been completed by W. H. Long and now await publication.[1]

As BIRD-LORE's Breeding-Bird Census attains its second anniversary, there is abundant evidence that not many general conclusions can yet be drawn about the various habitats reported herein. Swamps appear to have very high densities, although careful bird-watching may cut these down slightly by proving that Red-wings feed elsewhere.[2] Open fields in the present report yield populations of 290 (Knight), 324 (Moulthrop), and 340 (Fuller and Bole) adult birds per 100 acres. Before these can be accepted as representing a true mean, it will be necessary for Miss Hellwig to determine why a fourth open field with a population of 720 should be so much higher.

To many readers, perhaps, the varying densities for the several types of forest will seem rather confusing. No bird ever starts north in spring with an inborn preference for oak-hickory or for maple-beech. Its nesting requirements seem to be more concerned with the state of the forest, whether the forest crown is open or closed, whether or not a second canopy is present, how dense the shrubs are on the forest floor, and so on. If the densities of BIRD-LORE's censuses are some day to be classified or analyzed along logical lines, it will be up to each contributor to recognize and describe the significant features of his study area. This is no easy task but a reading of the pertinent census literature (see BIRD-LORE XL:144) will be of considerable help.

A number of the reports that follow give evidence of the total number of birds which an area carried during the breeding season. Imperfect though some of these numbers may be, they represent an attempt to analyze the birds of a tract not only in terms of its acreage and vegetation, but also in terms of the relation of its birds to the surrounding environment. Thus the number of nesting birds which fed outside the area studied ranged from two per cent (Cadbury, Cruickshank) to 33 per cent (Dambach) of the entire population. This classification is obviously more important in unusually small-sized habitat samples.

Of interest also are the reports which summarize data on the birds which fed in an area but did not nest there. When the time spent by such species in the study area is relatively short, the tract may have no real place in these birds' food requirements and their numbers may then be said to be

[1] Long, W. H. The Influence of Cover Improvement in Wildlife Management on the Distribution, Abundance, and Daily Activity of Wild Birds (Unpublished MS., Wildlife Research, School of Forestry and Conservation, Univ. Mich., 1931–1934).

[2] ———. The Effects of Environmental Temperature and Other Factors on the Distribution, Abundance, and Daily Activity of Wild Birds (Unpublished MS., as above).

negligible, statistically. The detailed report by L. Irby Davis should, however, be noticed for the number of its pertinent categories.

SYMBOLS. P = pair; M = male, generally singing on a fixed territory throughout the season; UM = unmated male; N = pair with nest; Y = a pair seen feeding young. Separated by commas, these figures represent the classified basis for the number of pairs of each species: "17—E. Crow, 2P, 4N, 4Y" = 10 pairs of Crows; enclosed in parenthesis, they indicate subtotals: "23—W. Robin, 2P (4N)" = 2 pairs of Robins which nested twice. A few observers have run these symbols together, "1PNY" meaning a pair with nest and young; "1PN" a pair and their nest.

MAPS. Although the instructions for mapping this year's census were explicit, a wide variation similar to last year's again occurred. The disposition of the maps now awaits a conference with the officials of Science Service.

SAND-DUNES. Open sand-dunes bordering on Lake Erie with scattered cottonwood, wafer ash, and willows. Sparse ground-cover of beach peas, bergamot, and andropogon grass. Lake Erie formed the northern boundary and attracted some fishermen, bathers, and others, especially during the latter part of the season. One camper on area all through nesting periods, but probably affected the birds little or none. **Size:** Approximately 25 acres. **Location:** Near Fairport Harbor, Lake County, Ohio. From continuation of western breakwater of Harbor, westward. **Water:** No water on the area excepting the boundary composed of Lake Erie on the north. **Edges:** Narrow areas similar to the area under study were on three sides with Lake Erie forming the northern boundary. **Coverage:** April 16; May 7, 28; June 4, 28; and July 20. Clear and sunny on all visits except June 25 when it was sultry and cloudy. All visits in A.M. About 24 hours of field-work. **Census:** Killdeer, 1PY; Spotted Sandpiper, 3P, 1N; Cowbird, 1Y (being fed by Song Sparrow); Goldfinch, 2P; Vesper Sparrow, 1P; Field Sparrow, 2P; Song Sparrow, 9P. **Total:** 20 pairs, 7 species. **Density:** 80 pairs per 100 acres. Besides the breeding pairs, the following species were noted either on or above the area at various times: Red-breasted Merganser, Cooper's Hawk, Osprey, Sparrow Hawk, Bob-white, Piping Plover, Semipalmated Sandpiper, Herring Gull, Ring-billed Gull, Bonaparte's Gull, Common Tern, Chimney Swift, Kingbird, Alder Flycatcher, Wood Pewee, Bank Swallow, Barn Swallow, Purple Martin, Crow, Bluebird, Starling, Yellow Warbler, Myrtle Warbler, Bobolink, Bronzed Grackle, Indigo Bunting. The Gulls and Terns often congregated on the sandy beach.—M. B. SKAGGS, Cleveland Bird Club.

MARSH AND SWAMP SHRUBS. Ten and one-half acres consist of common rush (*Juncus effusus*), woolgrass (*Scirpus cyperinus*), and cattail (*Typha latifolia*) marsh communities. Four and one-half acres consist of buttonbush (*Cephalanthus occidentalis*), swamp rose (*Rosa carolina*), small willow (*Salix nigra* and *S. amygdaloides*) and aspen (*Populus tremuloides*) shrub communities. **Size:** Approximately 15 acres (marsh 10.5 and shrub 4.5 acres). **Location:** North shore of Aurora Pond, Solon Bog, 3 miles northwest of Aurora, Portage County, Ohio. **Edge:** Upland grassland borders 3164 feet of landward side of marsh while a large yellow water-lily (*Nymphaea advena*) zone borders 1243 feet of the pondward edge of the area. **Topography:** Flat, low, filled lake basin. Altitude, 1000 feet. A small inflowing stream bisects area. **Surveys:** Continuous ecological study in area for 7 years including breeding bird population studies for 1932, 33, 34, 36, 37, and 38. **Coverage:** April 20, 27; May 12, 23; June 30; July 9, 23. **Weather and Physiographic Conditions:** The Cleveland, Ohio, weather bureau (20 miles away) reported an excess of precipitation for April of .26 inches but a deficiency for the period from January 1 to June 30 of .97 inches. Despite this, the water-level in Solon Bog was unusually high for the time of year as a result of a 6-inch increase in the height of the dam across the outlet stream in the autumn of 1937. The water-level of the marsh has now remained high (15 inches deep) in the area during the breeding season for two years in succession after a protracted period of several years of low water due to drought. Last year numerous rains kept the water-level up. The continued high water-level for two successive years has greatly altered the vegetation of the marsh, causing it to revert to the condition found in 1932 except that cattail covers a much larger area than at any time since the survey began. Common rush and woolgrass are still the dominant forms, as they have been throughout, but the amount of grass (*Homalocenchrus oryzoides*) and tick-seeds (*Bidens*) has been greatly reduced and the rushes (*Juncus* and *Scirpus*) greatly increased. There was a very early spring this year and an accumulative excess of temperature from January 1 to June 30 of 723° F. A killing frost in the middle of May, however, gave vegetation, particularly cattail which was far advanced, a bad setback. **Census:** E. Least Bittern, 1N, 2P in marsh (3); Common Mallard, 1Y in marsh (1); Virginia Rail, 3N in marsh (3); Florida Gallinule, 1P in marsh (1); Alder Flycatcher, 4M in shrub (4); Prairie Marsh Wren, 12N, 1Y, 3M in marsh (16); Catbird, 1M, 1Y in shrub (2); E. Yellow Warbler, 1N, 1M in shrub (2); N. Yellow-throat, 2M in shrub (2); E. Red-wing, 31N, in marsh (23), in shrub (8); E. Goldfinch, 2P in shrub (2); Swamp Sparrow, 3N, 5M, in marsh (6), in shrub (2); Mississippi Song Sparrow, 3M in shrub (3). **Total:** 78 pairs (53 in marsh, 25 in shrub). **Density:** 5.2 pairs per acre or 520 pairs per 100 acres (505 pairs per 100 acres in marsh and 555 pairs per 100 acres in shrub). For comparison the estimated densities for other years were: 1932, marsh 343, shrub 390; 1933, marsh 352, shrub 268; 1934, marsh 267, shrub 561; 1936, marsh 124, shrub 1073; 1937, marsh 171, shrub 536. The great annual fluctuations in populations are doubtless to a large extent due to change in water-level but probably also to other factors which are poorly understood. Besides the breeding pairs, certain species enter the area for feeding purposes during the breeding season. These were in 1938: Green Heron, American Bittern, Black Duck, Pintail, Green-winged Teal, Blue-winged Teal, Wood Duck, Sora, Killdeer, Spotted Sandpiper, Chimney Swift, Belted Kingfisher, Eastern Kingbird, Tree Swallow, Bank Swallow, Rough-winged Swallow, Barn Swallow, Purple Martin, Robin, and Starling.—JOHN W. ALDRICH, Cleveland Bird Club.

FRESH-WATER SWAMP. Same area as studied in 1937. **Size:** About 40 acres (paced). **Location:** Van Cortlandt Park, New York City. Elevation 20 feet above mean sea-level. Latitude, 40°, 53′, 04″N.

Longitude, 73°, 57′, 30″ W. Tract an ecological unit. **Coverage:** By four observers, May 25 through July 25; 160 man-hours in the field. **Census:** An attempt has been made to classify the bird population during the breeding season according to the relation each bird bears to the swamp. Five categories present themselves: (1) Birds nesting and residing entirely within the area. E. Green Heron, 1N; E. Least Bittern, 5N; Mallard, 1N, 1Y; E. Bobwhite, 1Y; Ring-necked Pheasant, 1P; Virginia Rail, 4N, 1P; Florida Gallinule, 5N, 1P; Sora, 1N; Yellow-billed Cuckoo, 2N; N. Flicker, 4N; N. Downy Woodpecker, 1N; E. Kingbird, 2N; E. House Wren, 1N, 1Y; Long-billed Marsh Wren, 47N, 1Y; Catbird, 16N, 1P; Brown Thrasher, 5N, 1Y, 1P; E. Robin, 19N, 2Y, 1P; Veery, 1P; E. Bluebird, 2N; Starling, 1N; Warbling Vireo, 2P; Red-eyed Vireo, 1P; E. Yellow Warbler, 11N, 3Y, 2P; N. Yellow-throat, 1N, 3P; House Sparrow, 1N; E. Red-wing, 161N, 4Y; Baltimore Oriole, 1N, 2P; E. Goldfinch, 1Y, 4P; Swamp Sparrow, 1N; E. Song Sparrow, 13N, 5P. Total: 30 species and 347 breeding pairs (306N, 15Y and 26P). Density: 17.35 birds per acre or 8.67 pairs per acre. Of these, E. Green Heron, 1P; E. Kingbird, 2P; E. House Wren, 1P and an indeterminable number of E. Red-wings (See Allen, A. A., Trans. Linn. Soc., N. Y., 1914) occasionally fed outside the area. (2) Birds for which no positive evidence of breeding other than presence throughout the entire census period was obtained. (Unit equals birds unless otherwise specified.) Canada Goose, 1P; Virginia Rail, 2; Ring-necked Pheasant, 1; Catbird, 2; Brown Thrasher, 1; E. Robin, 1; Warbling Vireo, 2; E. Yellow Warbler, 11; N. Yellow-throat, 9; Baltimore Oriole, 1; Cowbird, 1P, 1; Swamp Sparrow, 5; E. Song Sparrow, 4. Total: 13 species, and 44 birds. Density: 1.10 birds per acre. (3) Birds nesting within the area but feeding without. Starling, 7N; Baltimore Oriole, 1N. Total: 2 species and 8 pairs. (8N.) Density: .40 birds per acre or .20 pairs per acre. (4) Birds feeding within the area but nesting without. (Unit equals birds unless otherwise specified.) Black Duck, 1P; Wood Duck, 4; E. Sparrow Hawk, 1P; Killdeer, 2; E. Mourning Dove, 2; Rock Dove, 16; E. Nighthawk, 2; Chimney Swift, 10; Kingfisher, 2; Flicker, 1; Tree Swallow, 2; Rough-winged Swallow, 4; Barn Swallow, 4; E. Crow, 4; Fish Crow, 2; Starling, 50; Brown Thrasher, 1P; Purple Grackle, 20; Towhee, 1. **Total:** 19 species and 136 birds. Density: 3.40 birds per acre. (5) Wandering birds which have not yet nested or which may already have done so. (Unit equals birds.) Great Blue Heron, 1; Black-crowned Night Heron, 4; Mallard, 1; Blue-winged Teal, 1; Spotted Sandpiper, 1P; Chimney Swift, 15; Ruby-throated Hummingbird, 1; N. Crested Flycatcher, 2 or 3; E. Phoebe, 2; Least Flycatcher, 1; Acadian Flycatcher, 1; E. Wood Pewee, 1; Tree Swallow, 6; Rough-winged Swallow, 4; Barn Swallow, 15; Blue Jay, 1; E. Crow, 3; E. House Wren, 1; Carolina Wren, 1; Cedar Waxwing, 3; Starling, 350; Blackpoll Warbler, 1; Indigo Bunting, 1; and Least Sandpiper, 2. **Total:** 24 species, and 420 individuals. Average: 11.60 individuals per trip. **Final Breeding Densities:** Maximum—categ. (1), (2) and (3) = 18.85 birds per acre. Basis: nests (N)—79.7 per cent; young birds (Y)—3.8 per cent; pairs (P)—6.6 per cent; singing males (M)—9.9 per cent. [In 1937 density was 16.80 birds per acre.] Minimum—categ. (1) and (3) = 17.75 birds per acre. In terms of adults per 100 acres, 1735 birds definitely nested and fed within the swamp; 110 others always present but actual evidence of breeding was lacking; 40 used the area to nest in, but fed elsewhere; 340 regularly visited it for food and an average of 26 more casual visitors were noted per trip. The sum total density is 2250. **Comments:** About 1 acre of fill-in (Fordham Gneiss, Mica Schist and Diorite) has canalized the stream in the northern area, making the edge somewhat drier. Otherwise there are no important changes except the natural encroachments of one plant zone upon the other, which, in time, should cause the disappearance of the cattail, buttonbush and willow zones and result in the complete dominance of the red maple climax society. Compared to last year's report, the greater density is probably due to better coverage. Despite the fewer observers, the experience gained in 1937 resulted in an even more accurate census. A total of 63 species was seen in the swamp from May 25 to July 25. Care was taken to avoid counting second nestings.—W. FEIGIN, J. PHILIPS, O. STEPHENSON, and R. KRAMER, Sialis Bird Club, New York City.

LIGHTLY WOODED, SWAMP-MARGINED ISLAND. River island, approximately one-half mile maximum length and one-fifth mile maximum width, at average of 250 feet from main shore along one side. Black willow, Carolina poplar, and American elm dominant; no evergreens. Trees average less than 30 feet in height, few of 50 feet maximum, about 6 to 10 inches DBH, few 18 inches or more in diameter; considerable dead wood standing and on ground. Minimum of land without trees, and matter of only short time before all will be covered. Substratum mostly dense, of saw-grass, jewel weed, nettles, and sensitive fern dominant; considerable wild grape and cucumber, and other climbers; about 2 acres, densely shaded and damp, without substratum growth. Shallow swamp surrounds practically all the land; cattail dominant in swamp, mostly bordered with bur reed and arrow-head. The shallow swamp, particularly in bays at lower end of island, gradually becoming dry, but still supporting cattail growth; willows slowly extending to form islets beyond original shore. Until late May the water beyond the shallow swamp open, but by mid-June covered with water chestnut (*Trapa natans*), and by mid-July choked with it, even where water is 10 feet deep. The water-chestnut growth seems to aid in the spawning of various fishes, and birds are attracted. Green Herons, Least Bitterns, Gallinules, and Sandpipers walk over the dense growth; Waxwings, Swallows, and other species feed on insects on and above the growth. Muskrats, water snakes, and snapping turtles on and around island. Island is state-owned, and has minimum of interference by man. **Size:** About 21 acres of land, 25 acres of swamp containing cattails. **Location:** In Crescent Lake section of canalized Mohawk River, in northeastern Albany County (N. Y.), at junction of Schenectady and Saratoga counties; river ¾ mile wide, at 190-foot elevation. **Topography:** Island resulted from canalization of river about 25 years ago, when water-level was raised several feet by Crescent Dams; previously had been 'flood lands' of river. None of land more than 5 feet above normal river-level; usually mostly flooded in spring, and partially flooded after exceptional rains. Much of swamp shallow, with deep-muck bottom. Minimum of land more than 300 feet from swamp, and most of it within 75 feet. **Edge:** Island of very irregular shape; approximately 11,000 feet of edge of land to swamp or water, and 5400 feet of edge of swamp to water. **Survey:** Island visited regularly, all seasons, since 1930. **Coverage:** Preliminary trips in April and early May; 22 trips from mid-May to mid-August, with six observers and 147 man-hours, including evening, daybreak, and night trips. **Weather:** Previous winter open; some temperature and precipitation excesses during breeding season. Exceptionally warm weather of late April brought land birds well in advance of normal schedule, and land plants about two weeks early. Warmest April in 13 years, with temperature excess of 173°. May had temperature deficiency of 29°; June had excess of 37°; July was

coolest in six years; early August about normal. Average temperatures: April, 50.2; May 58.4; June, 69.2; July, 73.3. Precipitation: April, 2.19 inches; May, 2.72; June, 3.41; July, 4.25. **Census:** Pied-billed Grebe, 1Y; E. Green Heron, 4N; American Bittern, 1N, 3P; E. Least Bittern, 3N, 2M; Common Black Duck, 1Y, 2P; King Rail, 2M; Virginia Rail, 1N, 1Y, 2P; Sora, 1Y, 2M; Florida Gallinule, 11N, 6M; American Woodcock, 1P; Black-billed Cuckoo, 1P, 1M; Ruby-throated Hummingbird, 1P; E. Hairy Woodpecker, 1Y; N. Downy Woodpecker, 2N; N. Crested Flycatcher, 1P; Least Flycatcher, 1P, 1M; Tree Swallow, 4N, 5P; Black-capped Chickadee, 1N, 2P; Long-billed Marsh Wren, 57N (plus 'cock' nests in ratio 4:1), 21M; Veery, 1M; Red-eyed Vireo, 1M; E. Warbling Vireo, 1P, 1M; E. Yellow Warbler, 1N, 3P, 6M; Northern Yellow-throat, 2P, 2M; American Redstart, 1N, 2M; E. Red-wing, 12N, 6P, 14M; Swamp Sparrow, 1Y, 9P, 5M; E. Song Sparrow, 2N, 14P, 16M. **Total:** 28 species, 243 pairs, entirely within area. **Density:** 530 pairs per 100 acres (with three species—Marsh Wren, Red-wing, Song Sparrow—accounting for 308 pairs per 100 acres). Also, feeding to varying degree beyond area: Ring-necked Pheasant, 1N, 1M; Spotted Sandpiper, 1Y; Yellow-billed Cuckoo, 1M; N. Flicker, 1N; Alder Flycatcher, 1P; E. Crow, 2N, 1Y; Catbird, 1P, 1M; E. Robin, 4M; Baltimore Oriole, 1Y, 3M; Cowbird, 5Y (with E. Warbling Vireo, 1; E. Yellow Warbler, 2; E. Song Sparrow, 2), 3P, 2M; 10 species, 24 pairs; increasing the density to 580 pairs per 100 acres. Regular visitors: E. Green Heron, 10; Black-crowned Night Heron, 10; Common Black Duck, 9; Marsh Hawk, 2; E. Sparrow Hawk, 2; Killdeer, 6; E. Mourning Dove, 2; Barn Owl, 2; N. Barred Owl, 1; Chimney Swift, 20; E. Belted Kingfisher, 2; Bank Swallow, 4; Barn Swallow, 20; N. Blue Jay, 6; E. Crow, 12; Cedar Waxwing, 12; Bronzed Grackle, 8; E. Goldfinch, 14; 15 added species. Final density, 1470 adult birds per 100 acres. Occasional visitors: Great Blue Heron, June 5 (plus late summer dates); Lesser Scaup Duck, 7 (through June 4, beyond previous end-dates); N. Red-shouldered Hawk, 1; Wood Pewee, 1. Also, through breeding season, two roosts regularly occupied from dusk to dawn, one with 32 non-breeding Black-crowned Night Herons; the other with approximately 3000 Starlings, 200 Bronzed Grackles, and 200 E. Red-wings. After July 1 the roosts increased, and by August 13 included approximately: (1) Black-crowned Night Heron, unchanged; (2) Common Mallard, 4, Common Black Duck, 120, Blue-winged Teal, 7; (3) E. Robin, 80; (4) Tree Swallow, 600, Bank Swallow, 1200, Rough-winged Swallow, 100, Barn Swallow, 1000, Cliff Swallow, 50 (plus added Swallow roosts on near-by smaller islands); (5) Starling, 4000, Bronzed Grackle, 350, E. Cowbird, 200, E. Red-wing, 600. Added species recorded between July 1 and August 13, exclusive of short-duration migrants, included: American Egret, maximum of 4 regularly seen, arrived July 4 (recorded at island in all except one year since 1920 or earlier); Wilson's Snipe, 1; Herring Gull, 1; Semipalmated Sandpiper, 8; as well as increases in some species already noted.—George Bainbridge, E. S. Bartlett, Guy Bartlett, B. S. Havens, C. N. Moore, and Benton Seguin; compiled by Guy Bartlett.

BALSAM-BLACK ASH BOG. Situated at an altitude of approximately 800 feet above sea-level and rather heavily forested with considerable undergrowth. Counts of selected areas gave 23 per cent balsam, 43.5 per cent black ash, and smaller amounts of white spruce, black spruce, white pine, arborvitæ, hemlock, yellow birch, American elm, and swamp maple. The shrubbery included Bartram's juneberry, mountain holly, mountain maple, Labrador tea, and fly honeysuckle. The growth was not of uniform size but ranged from saplings to trees 3 feet in diameter breast high. Some border area outside the bog was included in the survey and here the forest crown averaged 60 feet in height while that within the bog proper would be about 40 feet. This border area contained some trembling poplar and a small amount of canoe birch in addition to the species already listed. **Size:** The bog contained 2.84 acres and the borders 5⅓ acres, making 8⅓ acres for the whole tract. **Location:** In Ryegate, Vt. Area bounded by similar forest except for a large part of one side, a small portion of one end, and a short distance along the other side where the boundary was formed by pasture covered by a scattered growth of trees. **Topography:** A shallow trough lying near the summit of the range of hills enclosing the Connecticut Valley. That part of the area outside the bog is but slightly higher. **Edge:** The partly open pasture probably accounted for the presence of such species as the Slate-colored Junco and White-throated Sparrow. **Surveys:** Intermittent observation throughout the season with special trips as often as once a week during the greater part of the breeding period. **Coverage:** May 22; June 14, 20, 26; July 5, 10, 17, 24, 31; Aug. 10, 14. Hours varied from 4 A.M. to 5.30 P.M., totaling 40. **Weather:** Close to normal throughout period. Preceding winter open and somewhat warmer than usual. Breeding season normal except for high temperatures during last part of April and first half of May, with migration and vegetation about ten days ahead of the average season. Precipitation was lighter in May and heavier in July. **Census:** Yellow-bellied Sapsucker, 1N, 1Y; Black-capped Chickadee, 1Y; Red-breasted Nuthatch, 1Y; Brown Creeper, 1N, 1Y; E. Winter Wren, 1Y; E. Hermit Thrush, 1Y; Olive-backed Thrush, 1UM; E. Golden-crowned Kinglet, 1Y; Blue-headed Vireo, 1N, 1P; Nashville Warbler, 1Y; N. Parula Warbler, 1Y; Magnolia Warbler, 1N, 1UM; Black-throated Blue Warbler, 1Y; Black-throated Green Warbler, 1Y; Blackburnian Warbler, 2Y; Oven-bird, 2Y; Canada Warbler, 1Y. **Total:** 17 species, 19 pairs, 2 unmated males. Nesting on tract but feeding in part outside: N. Blue Jay, 1N; E. Robin, 1N; Slate-colored Junco, 1Y; White-throated Sparrow, 1Y. Total: 4 species, 4 pairs. Frequent visitors: Canada Ruffed Grouse, 1Y; Black-billed Cuckoo, 1P; Great Horned Owl, 1M; Ruby-throated Hummingbird, 1P; N. Flicker, 1Y; N. Crested Flycatcher, 1M; E. Wood Pewee, 1P; Red-eyed Vireo, 1P; Black and White Warbler, 1Y; Myrtle Warbler, 1M; E. Purple Finch, 1P. **Density:** 252 nesting pairs, 24 unmated males, and 48 pairs which nested in the area but fed elsewhere, gives a total of 624 adult birds per 100 acres.—Wendell P. Smith, Wells River, Vt.

TAMARACK BOG. This bog, at an altitude of 500 feet and 1 mile distant from the "balsam-black ash bog," is quite different in character. There are many open spaces or areas covered only by shrubbery. The forest cover is different, with tamarack predominant, and constituting 48 per cent by count. White spruce is next in rank, making 25 per cent of the total with balsam, white pine, hemlock, balm of Gilead, canoe birch, yellow birch, and swamp maple in smaller amounts. The shrubs include bog willow, hoary alder, Bartram's juneberry, mountain maple, swamp, round-leaved, and red-osier dogwoods. **Size:** Area of bog, .93 of an acre. Borders included in survey, 1.87 acres. Total area, 2.80 acres. **Location:** Wells River, Vermont. Tract bounded for one-half its circumference by pasture with scattered shrubbery; for most of the remainder by a railway track, and, just beyond, a river with a narrow tree-lined bank between. Two narrow segments of woods complete the boundary. **Topography:** The area is surrounded on three sides by hills. On the fourth lies

the Wells River, slightly lower. The western edge of the tract and part of the north, is a steep hillside rising 40 feet above the bog. A brook issues from a large spring on the edge of the bog and traverses the area. **Edge:** The largely open pasture provides feeding-ground for such species as the Crow, Robin, Chipping Sparrow, and Song Sparrow. **Coverage:** May 20; June 15, 20, 29; July 3, 8, 16, 25, and intermittent observation throughout the season. Hours varied from 4.30 A.M. to 8 P.M., totaling 25. **Census:** Black-capped Chickadee, 1Y; E. Hermit Thrush, 1Y; Veery, 1Y; Blue-headed Vireo, 1P; Nashville Warbler, 1Y; Myrtle Warbler, 1Y; Black-throated Green Warbler, 1Y; Blackburnian Warbler, 1Y; N. Pine Warbler, 1Y; Oven-bird, 1Y; E. Purple Finch, 1P; Slate-colored Junco, 1P; White-throated Sparrow, 1Y. **Total:** 13 species, 13 pairs. Nesting on tract but securing part of food-supply elsewhere: E. Crow, 1N, 1Y; E. Robin, 1Y; E. Chipping Sparrow, 1Y; E. Song Sparrow, 1Y. Total, 4 species, 5 pairs. Frequent visitors: Ruby-throated Hummingbird, 1P; E. Wood Pewee, 1Y; Red-eyed Vireo, 1P; Black and White Warbler, 1Y; Magnolia Warbler, 1M; Black-throated Blue Warbler, 1M; Am. Redstart, 1Y; E. Goldfinch, 1P. **Final density:** 464 pairs per 100 acres, plus 179 pairs which went outside the study area for food, gives 643 nesting pairs per 100 acres. —WENDELL P. SMITH, Wells River, Vt.

OPEN AND SCRUBBY FIELDS. About 17 acres of rather uniform open fields with common plantain, blackberries, goldenrod, and a few small crabapple trees. About 14 acres of crabapple and black cherry trees 5 to 15 feet high with ground-cover of wild carrot, small thorns, oxeye daisies, and milkweed. **Size:** 31 acres. **Location:** Village of Maple Heights, Cuyahoga County, Ohio. Bordering Libby Road between Northfield and Warrensville Center Roads. **Topography:** Rolling upland, gently descending. A small streamlet traverses the southern boundary for 480 feet. This and a small ditch contain the only evidence of water, but are dry during periods of light precipitation. **Edges:** A hardwood forest borders the eastern boundary for 500 feet. Libby Road (paved) borders the northern boundary for 2460 feet. Shrubs on western boundary, 430 feet. **Surveys:** Preliminary trips April 15, 17, 24. **Coverage:** May 1, 10, 22, 30; June 5, 11, 13, 19, 23, 29; July 3, 22; August 5. Hours varied from 6.30 A.M. to 6.30 P.M. and totaled 39. **Census:** Bob-white, 1P, 2Y; Ring-necked Pheasant, 1N; Woodcock, 1N; Yellow-billed Cuckoo, 1Y; Flicker, 1Y; Kingbird, 1Y; Robin, 4Y; Cedar Waxwing, 1Y; Bobolink, 1Y; Meadowlark, 2P, 1N; Cowbird, present; Goldfinch, 2N, 1Y; Red-eyed Towhee, 1P, 1Y; Grasshopper Sparrow, 1P, 1Y; Vesper Sparrow, 3Y; Field Sparrow, 6Y; Song Sparrow, 1P, 2Y. **Total:** 39 pairs. **Density:** 145 pairs per 100 acres. Frequent visitors to the area during the nesting season were the following: Marsh Hawk, 1M; Killdeer, 2P; Ruby-throated Hummingbird, 1F; Bluebird, 1Y. —CHARLES H. KNIGHT, Cleveland Bird Club.

OPEN FIELD. Area covered with tall grass, brambles, scrub thorns, old apple trees, a few large trees at edges, two large dead chestnuts. The area is cut through the center by a small swampy tract with cattails, willows and other swamp vegetation. **Size:** About 15 acres upland; 5 acres swampland. **Location:** About halfway between East Claridon and Middlefield, Geauga County, Ohio. On lands of Geauga County Country Club, 2 miles south of Route 322. **Topography:** Sloping hillsides to creek and swampy area which occupies center of tract. **Edge:** Bounded on north by railroad embankment (1100 feet); on east by plowed field (800 feet); on south by dirt road along edge of old beech-maple woods, on west by open meadow. **Surveys:** Breeding-bird population studied intensively in 1937. **Coverage:** April 17, 30; May 7, 14, 28, 29, 30; June 4, 14; July 3. **Weather:** Normal throughout nesting period. **Census:** (1) Open field and scrub habitat: Green Heron, 2PN; Ring-necked Pheasant, 1N; Mourning Dove, 3PN; Black-billed Cuckoo, 1P; Flicker, 1PN; Blue Jay, 1P; House Wren, 1PN; Catbird, 9PN; Brown Thrasher, 2PN; Robin, 4PN; Wood Thrush, 1P; Cedar Waxwing, 1P; Starling, 1PN; Blue-winged Warbler, 1P; Yellow Warbler, 4PN, 4P; Baltimore Oriole, 1PN; Cardinal, 1P; Rose-breasted Grosbeak, 4PN; Red-eyed Towhee, 2P (1 raised Cowbird); Vesper Sparrow, 1N; Field Sparrow, 2N, 3P; Song Sparrow, 3P. **Total:** 54 pairs. **Density:** 360 pairs per 100 acres.

(2) Swampy habitat: Alder Flycatcher, 2P; Northern Yellow-throat, 4P; Red-winged Blackbird, 5P (3 males, 5 females); Swamp Sparrow, 3P; Song Sparrow, 2P. **Total:** 16 pairs. **Density:** 320 pairs per 100 acres.—ISABELLE HELLWIG, Cleveland Bird Club.

OPEN FIELD, BEGINNINGS OF TREES. Largely open field covered with tall grasses, blackberries, cinquefoil, and wild strawberries. Scrub thorns, choke-cherry, and young white ash trees scattered throughout. On western edge scrub apple and pear trees form thickets. A few elms and red maples grow about some small bogs. **Size:** Approximately 42 acres. **Location:** Kirtland Hills, Lake County, Ohio, being that part of the Holden Arboretum lying east of Sperry Road. Rolling upland with several small swampy pockets. **Water:** The swampy areas or bogs are usually dry in the late summer. Surface drainage produces temporary water-ways as indicated on map. **Edges:** About 2050 feet of cultivated land on the north, 1200 feet of cultivated land on the east, 1400 feet of forest edge, which attracted 2 pairs of birds, 700 feet of fallow field on the south, 1200 feet of dirt road on the west. **Coverage:** April 4, 18, 28; May 1, 2, 7, 9, 16, 21, 23, 26; June 9, 13, 18, 20. Hours varied from 9 A.M. to 6 P.M., totaled 48. **Surveys:** Frequent trips in late spring and early summer for 2 years; mapping completed April 28, 1938. **Weather:** Normal for this season. **Census:** E. Bob-white, 1P; Black-billed Cuckoo, 3N; Catbird, 1N; Brown Thrasher, 1N; E. Robin, 3N; Red-eyed Vireo, 1N; Oven-bird, 1N; N. Yellow-throat, 1N, 1Y, 2M; E. Meadowlark, 2P, 2Y; Red-winged Blackbird, 1N; E. Cowbird, present; Indigo Bunting, 1Y; E. Goldfinch, present; Red-eyed Towhee, 2P, 1Y; W. Henslow's Sparrow, 1M, 1P; Vesper Sparrow, 2P, 2Y; E. Field Sparrow, 5N, 9Y, 7M, 2P; E. Song Sparrow, 6N, 5Y, 2P. **Total:** 16 species, 68 pairs, excluding Cowbird and Goldfinch. **Density:** 162 pairs per 100 acres (in 1937, 140 pairs). Frequent visitors: Marsh Hawk, 1Y; E. Mourning Dove, 1Y; Black-billed Cuckoo, 1P; N. Flicker, 1P; E. Crow, 1Y; Black-capped Chickadee, 1Y; Tufted Titmouse, 1Y; E. Bluebird, 1P; Red-eyed Vireo, 1P; E. Yellow Warbler, 1P; Oven-bird, 1M; E. Chipping Sparrow, 2P. In addition a few Chimney Swifts, Rough-winged Swallows, Barn Swallows, and Bobolinks, and E. Red-winged Blackbirds visited the area regularly.—PHILIP N. MOULTHROP, Cleveland Bird Club.

OPEN FIELDS AND THORN SCRUB. Containing 2 small bogs and 3 small ponds, a small grove of large sugar maples, and another of papaw. Several old trees and stubs provide nesting cavities. One small building. This year about 25 nest boxes were set on posts in the open field habitat. A considerable planting of evergreens has not yet reached sufficient size to influence bird population. **Size:** In all, 61 acres. Approximately divided as follows: 43 acres open fields, 18 acres thorn scrub, 5.6 acres bogs and ponds, 2.4 acres maple and papaw groves. **Location:**

Holden Arboretum, Kirtland Hills, Lake County, Ohio. West side of Sperry Road. **Topography:** Gently rolling small hills and knobs with general slope toward northwest. **Surveys:** Continuous surveys since 1934. **Coverage:** Weekly from middle of April through July. Hours usually 8 A.M. to 12 noon. **Weather:** Very early spring this year, and accumulated excess of temperature from January 1 to June 30 of 723° F. A killing frost in middle of May gave some vegetation a severe setback. **Census:**

43 acres open fields.

Am. Woodcock, 1Y; Ruby-throated Hummingbird, 1P; Phoebe, 1N (on building); Alder Flycatcher, 1PY; Black-capped Chickadee, 2PN (in boxes); House Wren, 1P, 4N (4 in boxes); Catbird, 1P, 2N; Robin, 1P, 3N; Bluebird, 2P, 4N (6 in boxes); Starling, 1N (1 in box); Yellow Warbler, 4P; N. Yellow-throat, 2P; Meadowlark, 2N, 1Y; Cowbird (frequ ntly noted but no estimate made of numbers); Red-eyed Towhee, 2P; Grasshopper Sparrow, 1P; Vesper Sparrow, 2P, 1N; Chipping Sparrow, 1P, 1N; Field Sparrow, 9P, 8N, 2Y; Song Sparrow, 7P, 5N, 1Y. **Total:** 74 pairs. **Density:** 170 pairs per 100 acres.

18 acres thorn-scrub.

Black-capped Chickadee, 1PN; Yellow-billed Cuckoo, 1N; Black-billed Cuckoo, 2N; Robin, 2N; Red-eyed Towhee, 1P; Field Sparrow, 2N. **Total:** 9 pairs. **Density:** 50 pairs per 100 acres.

5.6 acres small bogs and ponds.

Green Heron, 1Y; Mallard, 1Y; Wood Duck, 2Y; Killdeer, 1N; Spotted Sandpiper, 1Y; Flicker, 1P; Kingbird, 1N; Phoebe, 1P; Starling, 2N; Yellow Warbler, 1P; Red-winged Blackbird, 9N (possibly 7 males, 9 females); Song Sparrow, 1P. **Total:** 22 pairs. **Density:** 393 pairs per 100 acres.

2.4 acres isolated sugar maple and papaw groves. Black-billed Cuckoo, 1N; Wood Pewee, 1M; Red-eyed Vireo, 1M. **Total:** 3 pairs. **Density:** 125 pairs per 100 acres.

Total for the entire 61 acres: 108 pairs. **Density:** 167 pairs per 100 acres. Besides the breeding birds the following species were noted commonly on the area. Pied-billed Grebe, a single bird frequently noted on the buttonbush bog where a pair nested last year. Red-tailed Hawk, nesting in beech-maple area to west, often seen circling over fields. Bob-white, frequently noted in numbers, probably nested just off the area. Belted Kingfisher a regular visitor to ponds and bogs. Barn Swallows regularly hunted across fields and bogs.—ARTHUR B. FULLER and B. P. BOLE, JR., Cleveland Bird Club.

OPEN WILLOWS AND DENSE HACKBERRY-ASH ASSOCIATION. Same section of lake-bottom and adjoining banks at La Palma Banco No. 25 as censused last year under title of "Vines, Thorny Shrubs and High Grass." However, a considerable change has been brought about in the general appearance of the willow bottom due, directly or indirectly, to the prolonged drought. Whereas the lake was about ½ mile long and extended a short distance into the census tract last spring, it was merely a muddy pond about 100 feet long (at the turn of the bow) this year. Last fall was the first time in some six to eight years that the bottom of the whole west arm of the lake had become quite dry and hard. The Mexicans living just outside the census tract took advantage of the drought and set fire to the tall dry grass in the fall of 1937. The fire killed most of the mimosas and vines. A second fire set in the winter burned the dead mimosas and made such a hot fire that most of the willows in the northeast section (shown shaded on the map) were killed. A wagon-trail was made through the bottom during the winter and wood-cutting began. The cutting was continued all through the spring and summer. Probably 10 per cent of the willows have fallen but are scarcely missed as they have been taken out at random and the growth was already quite open. The main change in the appearance of the tract is due to the failure of the morning-glory vines to grow back up the trees and the influx of several tall weeds which made a heavy growth in the south half of the tract. The weeds are mostly sunflowers, bloodweeds, and careless weeds, ranging from 5 to 15 feet in height and growing in banks of almost or quite pure stands. In the central-eastern portion of the bottom there was a more or less typical growth of grass although it was only about 2 feet deep. In the area of the most severe burn the ground was almost bare the first part of the summer but later there was a growth of small weeds and grass and the willows and mimosas

sprouted up from the roots. In the northwest section of the bottom (the area covered by water the previous year) there was a good growth of persicaria about 3 feet high. The dense growth of ash and hackberry trees on top of the banks is little changed except for several small cleared places where sunflowers have sprung up. **Size:** Approximately 15 acres. **Location:** Cameron County, Texas. **Topography:** About 10 acres flat bottomland, 2 acres sloping bank, and 3 acres level ground at top of bank. **Water:** None within ¼ mile of tract. **Edges:** See remarks above and below. **Coverage:** March 20 (1 hour only); May 8, 15, 22, 29; June 5, 12, 19; July 3, 10. Hours varied from 5.35 A.M. to 12 M.; totaled 42 hours and 40 minutes. **Weather:** Dry and warm on every census day; for general report see 'Rio Grande Delta Region' reports in the season column in BIRD-LORE. **Census:** Variations (from last year's census) in the subspecific names used below occur where the editor made insertions in the 1937 report in error. Chacalac, 1P; W. Mourning Dove, 6P (6N); E. White-winged Dove, 5P (5N); White-fronted Dove, 4M (on account of the drought there were many more food plants for Doves and seed-eating birds in the census tract and the rest of the lake bottom than in any of the surrounding country); Yellow-billed Cuckoo, 4 birds sex unknown counted as 2P; Groove-billed Ani, 1P; Texas Woodpecker, 1Y; Couch's Kingbird, 4P (5N, 1 false nest, 1 nest used twice); Derby Flycatcher, 1N; Mexican Crested Flycatcher, 1N, 1Y; Green Jay, 1Y; Black-crested Titmouse, 1Y; Lomita Wren, 7P (1N, 4Y); Sennett's Thrasher, 5N, 1Y; Rio Grande Vireo, 1N, 2Y; Delta (not Rio Grande) Yellow-throat (*Geothlypis trichas insperata* Van Tyne—No. 681g on the map), 14M (9N, 2Y) [through a typographical error 1N was reported in 1937 instead of 7]; Yellow-breasted Chat (not Long-tailed), 11P (14N); Rio

Grande Red-wing, 5N; Orchard Oriole, 12P (20N); Audubon's Oriole, 1P; Dwarf Cowbird, 4M; Red-eyed Cowbird, 1P; Summer Tanager, 2N; Gray-tailed (not Louisiana) Cardinal, 2Y; Sharpe's Seed-eater, 11P (18N); Texas Sparrow, 9N. **Total:** 26 species and subspecies, 117 pairs. Resident in tract first part of summer but moved out later: Texas Red-shouldered Hawk, 1N (1Y) (resident most of the time during March and April, fed outside the tract in May and was not seen at all in June and July); Chacalac, 2P; Rose-throated Becard (No. 472.5 on map), 1UM. Total: 3½ pairs; averaged 1.7 individuals per census day. Feeding outside tract: Mexican Turkey Vulture, 4P; Black Vulture, 1P. Total: 5P. Resident after July 1: Red-billed Pigeon, 4P (probably post-nuptial visitors from Mexico); averaged 1.6 individuals per census day. Frequent visitors: Texas Bob-white, 1M; Mexican Ground Dove, 1; Cherrie's Nighthawk, 2; Golden-fronted Woodpecker, 1; Lesser Cliff Swallow, 2; W. Mockingbird, 2; Great-tailed Grackle, 2P (2Y); averaged 2.2 individuals per census day. **Total summer resident species:** 38. Migrants: None feeding in tract on two census days; greatest density on May 15; last spring migrants were 2 Pewees listed on June 5; first fall migrant was Black and White Warbler found working the willows on July 3; averaged 6 individuals per census day. [In a letter, Mr. Davis writes: "The working out of 'territories' is an absurd item in an area where there is any appreciable density of nests. For instance the Orchard Orioles alone were so thick in the south-central section of my tract that I never did know what nest belonged to which, and I really don't know for sure whether I have the proper number of pairs of this species listed or not. In fact I am absolutely certain in only one case that the same pair of Orioles built two different nests. The same is more or less true with Chats and Seed-eaters."] **Final average density:** 1,686.3 adult birds per 100 acres. **Remarks:** The Red-wing nest shown on the map on the west bank apparently in the hackberry-ash association was on a sunflower stalk in a clearing. The Rose-throated Becard lived for some time in the 'territory' shown in the map but was supposedly driven away by the wood-cutters who worked for several days in this small area.—L. Irby Davis, Harlingen, Tex.

YOUNG BEECH-MAPLE-HEMLOCK FOREST. Beech, sugar maple, and hemlock, about 29 acres. Understory of small sapling and seedling trees fairly well developed. Ground-cover of herbaceous plants in early spring. Second-growth young oak and hickory with much wreckage of chestnut, about 10 acres. Many saplings and seedlings here. In ravine bottom a few flood-plain species but not enough to differentiate it greatly from the upland. **Size:** Approximately 39 acres. **Location:** Kirtland Hills Village, Lake County, Ohio, being the western, or wooded section of lands belonging to the Holden Arboretum. **Topography:** Rolling upland cut by gullies and ravines, and including one side of the deep ravine of Pierson Creek with a portion of its bottomlands. **Edges:** Forest edge bordering on open field on east, about 2500 feet. **Surveys:** Intensive ecological studies have been carried on since 1935, including studies of breeding bird population for 1937. **Coverage:** April 22, 28; May 2, 5, 16, 26, 27, 30; June 2, 9, 18; August 8, 16. Hours varied from 8 A.M. to 7 P.M. and probably totaled about 30. **Census:** Red-tailed Hawk, 1PNY; Red-bellied Woodpecker, 1PN, 1P; Hairy Woodpecker, 2P; Downy Woodpecker, 3P; Crested Flycatcher, 3P; Acadian Flycatcher, 2N, 4M; Wood Pewee, 3M, 2Y; Blue Jay 1Y; Black-capped Chickadee, 3Y; Tufted Titmouse, 1P, 2Y; White-breasted Nuthatch, 1P, 1Y; Robin, 1Y; Wood Thrush, 1N, 3P; Yellow-throated Vireo, 1M; Red-eyed Vireo, 5P, 8M, 2Y; Cerulean Warbler, 4M; Black-throated Green Warbler, 1Y; Oven-bird, 2N, 11P; La. Water-Thrush, 2P; Hooded Warbler, 3P, 3Y; Redstart, 1N, 5P; Scarlet Tanager, 2P, 1M; Rose-breasted Grosbeak, 1M. **Total:** 88 pairs. **Density:** 220 pairs per 100 acres. In addition to the nesting species the following were more or less regularly noted as visitors to the area: Cooper's Hawk, Red-shouldered Hawk, Barred Owl, Belted Kingfisher (Pierson Creek), Pileated Woodpecker.—M. B. Walters, B. P. Bole, Jr., P. N. Moulthrop, Cleveland Bird Club.

RED MAPLE-YELLOW BIRCH BOG FOREST. Forest crown rather open with a great many dead stubs (chiefly yellow birch) and a few overturned large trees (chiefly red maple). Shrub stratum dense in a few places but for the most part sparse; shrubs consist chiefly of toothed arrow-wood (*Viburnum dentatum*), tall blueberry (*Vaccinium corymbosum*) and spicebush (*Benzoin æstivale*). Trees are for the most part small with a few large red maples, 12 to 15 inches in diameter. Yellow birch (*Betula lutea*) is the most abundant, comprising 40 per cent, and red maple (*Acer rubrum*) comprising 31 per cent of the total trees, second. The ground-cover is a dense growth of cinnamon fern (*Osmunda cinnamomea*), Halberd-leaved tear-thumb (*Tracaulon arifolium*), Canada Mayflower (*Unifolium canadense*) with much sphagnum and other mosses. **Size:** 22.8 acres. **Location:** north shore of Aurora Pond, Solon Bog, 3 miles northwest of Aurora, Portage County, Ohio. **Edge:** provided by 423 feet of mature willow-aspen; 2679 feet of young willow-aspen following fire of 1933; 1058 feet of swamp shrub. **Surveys:** Ecological studies carried on for seven years including breeding bird population studies for 1933, '34, '36, '37, and '38. **Coverage:** April 20, 27; May 12, 23; June 30 and July 9. Hours varied from 8.30 A.M. to 12 noon; totaled 12. **Weather and Physiographic Conditions:** The Cleveland Weather Bureau reported an excess of precipitation for April of .26 inches but a deficiency of .43 inches for May and .67 inches for June with an accumulative deficiency for the period from January 1 to June 30 of .97 inches. Despite this, the water-level in Solon Bog was unusually high for the time of year as a result of a 6-inch increase in the height of the dam across the outlet stream brought about in the autumn of 1937. Considerable standing water remained in the bog forest throughout the breeding season, and two years of this condition has radically altered the condition of the vegetation on the forest floor, bringing in much more grass, sedge, and herbaceous growth than has existed since 1932. There was a very early spring this year and an accumulative excess of temperature from January 1 to June 30 of 723° F. A killing frost in the middle of May, however, gave vegetation which was far advanced a bad setback. **Census:** N. Flicker, 1Y; E. Downy Woodpecker, 1Y; N. Crested Flycatcher, 1P; E. Wood Pewee, 1P; Black-capped Chickadee, 1Y; Tufted Titmouse, 1P; White-breasted Nuthatch, 1P; House Wren, 1M; Catbird, 1P, 1M; Red-eyed Vireo, 1P, 1M; Oven-bird, 1M; Grinnell's Water-Thrush, 1N, 2M; N. Yellow-throat, 3P, 2M; E. Cowbird, 1P; E. Cardinal, 1M; Rose-breasted Grosbeak, 1M; Swamp Sparrow, 2M; Miss. Song Sparrow, 1N, 1P, 1M. **Totals:** Estimated density 29 pairs in area or 1.27 pairs per acre or 127 pairs per 100 acres. For comparison, the estimated density for 1933 was 88; 1934, 175; 1936, 75; and 1937, 66 pairs per 100 acres. Besides the breeding pairs certain species entered the area for feeding purposes during the breeding season. These included: Green Heron, Ruby-throated Hummingbird, E. Hairy Woodpecker, E. Robin, and Scarlet Tanager.—John W. Aldrich, Cleveland Bird Club.

BOTTOMLAND-OAK-HICKORY-ELM FOREST. About 6½ acres, formerly cleared, now grown up to thickets. Forest crown open. About 8 dead trees per acre. Thickets occupying about four-fifths of the entire area. Trees averaging about 60 feet in height and 10 inches DBH. Typical of river flood-plains of eastern and central Oklahoma. Most abundant large trees, pin oak (*Quercus palustris*), 75 per cent; spotted oak (*Q. shumardi*), 10 per cent; bur oak (*Q. macrocarpa*), 10 per cent. Thickets composed of young oaks, elms, redbud (*Cercis canadensis*), hawthorns, roughleaf dogwood (*Cornus asperifolia*), sumac (*Rhus glabra* and *R. copallina*), wild grapes and plums, and, most abundant of all, blackberry and coral-berry (*Symphoricarpos orbiculatus*). Since 1924 the area has been protected from fire and wood-cutting but not managed especially to attract birds. It is used for nature study by interested groups. **Size:** About 34 acres. **Location:** In Mohawk Park, Tulsa, Okla. **Topography:** Nearly level flood-plain. Greatest difference in elevation about 7 feet. **Edge:** Total length between formerly cleared land and woodland, 1740 feet. Water edge divided about equally between old field and woodland, 2400 feet. **Surveys:** Frequent trips for last six years. Nesting census 1937. Area included in Christmas census. Mapped 1932 and 1937. **Coverage:** March 12, 19; April 2, 9, 13; May 8, 11; June 12; July 23. Hours varied from 6 A.M. to 6.45 P.M. Total man-hours afield, 57. **Weather:** Temperature near average; rainfall above average; previous winter unusually mild. **Census:** Species which nested and fed within area: Yellow-billed Cuckoo, 1N; Barred Owl, 3P; Ruby-throated Hummingbird, 2P, 1N; Flicker, 2P; Red-bellied Woodpecker, 2P; S. Hairy Woodpecker, 1P; Downy Woodpecker, 4P, 1N; Crested Flycatcher, 3P, 1N; Wood Pewee, 1P; N. Blue Jay, 2P; Chickadee, 3P, 3Y (2Y, 2Y); Tufted Titmouse, 2P, 2N; Carolina Wren, 1P (2Y August 21 about 200 feet from location on map shown for pair); Catbird, 1P; Brown Thrasher, 1P; Bluebird, 1P; Blue-gray Gnatcatcher, 3P; White-eyed Vireo, 1P, 1UM (no nest found but constantly present); Red-eyed Vireo 3P; Kentucky Warbler, 1P, 1N; N. Yellow-throat, 1P; Yellow-breasted Chat, 2P, 1N; Cowbird, 1Y fed by Kentucky Warbler; Summer Tanager, 1P; Cardinal, 2P, 2N; Indigo Bunting, 2P, 1N, one of these pair believed to have nested outside area but constantly seen; Chipping Sparrow, 1P; Field Sparrow, 2P. **Total:** 28 species on territory, 48 pairs, 11 nests discovered, 4 pairs with young, 1 unmated male. Species which nested in area and fed outside: Green Heron, 1P; Yellow-crowned Night Heron, 4N; Crow, 1N. Visitors included Cooper's Hawk, Red-shouldered Hawk (nested near-by in similar woods); Great Horned Owl, 1P (nested across lagoon south of area); Belted Kingfisher; S. Pileated Woodpecker; Red-headed Woodpecker; White-breasted Nuthatch and Wood Thrush (both nested in adjacent woods); Goldfinch, averaged 5 seen per trip. **Density:** 185 pairs per 100 acres, plus 3 unmated males, plus 18 pairs which fed outside the study tract.—RECORDING COMMITTEE TULSA AUDUBON SOCIETY, H. T. PHILLIPS, BOYD ROBINSON, WALLACE HUGHES, and ORRIN W. LETSON.

GRAZED AND PROTECTED SUGAR MAPLE FOREST. The following account is a report of a breeding-bird census of contiguous tracts of grazed and protected secondary sugar maple woods on an area formerly occupied by climax beech-maple forest. This type of secondary sugar maple woods is common in northeastern Ohio, particularly in the important maple-syrup-producing counties. The present secondary stand has resulted from selective cutting which has favored only the sugar maple and other desirable timber trees. Species present other than sugar maple are: beech, tulip poplar, cucumber magnolia, black gum, white ash, red oak, white oak, black cherry, butternut, shellbark hickory, American elm and basswood. Sugar maple comprises 90 per cent of the stand. The diameter of trees at breast height ranges from 3 to 36 inches. The average diameter at breast height is 14 inches. Log, tree and crown heights are uniform, the average height being 71 feet. There are approximately 100 trees per acre

Left, protected forest; right, grazed forest

of woods. **Management:** No dead stubs or stag-headed trees have been permitted to stand. The woods have been pastured since about 1915 at the rate of three-fourths animal units per acre of woods. The adjacent pasture has been grazed at the rate of one animal unit per acre. Prior to protection of one tract from grazing in 1932 no understory of shrubs or young trees was evident in either woods. Reproduction counts made in 1938 indicate a stand of 40,200 tree seedlings per acre in the woods protected from grazing, averaging 17 inches high as compared with 25 seedlings per acre averaging 3 inches high in the pastured woods. Ten species of shrubs and 25 species of herbaceous plants were recorded in the protected woods and 2 species of shrubs and 14 species of herbaceous plants in the grazed woods in observations made in 1938. Both woods are utilized for production of maple syrup annually. 'Sugar Camps' are located in both woods and wood for fuel is piled at various points around the camps. **Location and General Description:** The pastured and protected woods are contiguous tracts on the F. E. Kibler and F. Urbanowicz farms in Burton township, Geauga County, Ohio, on the Burton-Troy Pike, 2.3 miles south of Burton, Ohio, in Range 7. Soil-type, drainage and exposure are similar, and both woods are bounded by forest of similar composition on the east and south sides. The pastured woods is bounded by the protected woods on the north side and exposed to pasture on the west side. The protected woods is exposed to cultivated land on the west side and open to pasture on the north side. A three-row conifer windbreak of blue spruce transplants averaging 10 inches in height was planted at 3-foot spacing in and between the rows along the west boundary of the protected woods during May, 1938. The topography is gently rolling, sloping generally to the west toward the valley of the Cuyahoga River. The elevation ranges from 1180 to 1200 feet. Both woods are transected by shallow draws which carry water only during periods of heavy precipitation. **Size:** The size of the protected woods is 7.9 acres, and the pastured woods, 13.65 acres. Measurements were made with a steel chain-tape. **Edge:** Pastured woods, about 1600 feet of closely grazed pasture. Protected woods, 378 feet of cultivated land (corn-wheat) and 906 feet of closely grazed pasture. Total edge in protected woods, 1284 feet. No birds recorded in edge of pastured woods. Five pairs and one unmated male recorded in edge of protected woods. **Surveys:** Observational studies of tree, shrub, and herbaceous plant reproduction since protection from grazing in 1932. Establishment of reproduction and volume growth study plots in 1937-38. Mapping completed February, 1938. **Coverage:** May 29, 30; June 4, 5, 6; and July 3, 4, 5, 1938. Census hours from 5 to 7 A.M. Supplementary observations conducted while setting up and recording data from reproduction plots June 4, 5, 6, and July 4, 5. Total intensive census hours, 10. Additional hours study in tract, 40. **Weather:** Normal throughout period of observations. Winter previous unusually open. Spring of 1938 unusually early resulting in extensive injury to some fruit- and nut-bearing species from late frosts. Precipitation somewhat above normal during spring and early summer months. Spring and early summer temperatures average. **Census:** Protected woods. Yellow-billed Cuckoo, 1M; Eastern Wood Pewee, 1M; Red-eyed Vireo, 2M; Cerulean Warbler, 1M; Oven-bird, 2Y; American Redstart, 1M; Tufted Titmouse, 1M; Black-capped Chickadee, 1M. **Total:** 8 species, 10 pairs. **Density:** 126 pairs per 100 acres. Feeding outside area: Bob-white, 1UM; Field Sparrow, 1N; Song Sparrow, 2M; Indigo Bunting, 2M. Total feeding outside of area, 4 species, 5 pairs, one unmated male. Total in woods, 11 species, 15 pairs, one unmated male. Total density in woods, 189 pairs per 100 acres. Pastured woods: Red-eyed Vireo, 3M; Oven-bird, 2M; Eastern Robin, 1N. Total 3 species, 6 pairs. Total density, 43.2 pairs per 100 acres. — CHARLES A. DAMBACH, Dayton, Ohio.

SECOND-GROWTH HARDWOOD. Seventy per cent of area mostly second-growth small trees, mulberry, wild cherry, elm and locust, with considerable grape-vines, blackberries, and sumac. Remaining area (east of dotted line on map) heavily forested with elm, oak, linden and some maple. **Size:** About 15 acres. **Location:** West of Blackhawk State Park, Rock Island, Ill. **Water:** One small pond. **Edges:** Along road and paths indicated on map by double line, along cliffs and pond, total, one-third (?) of area. **Surveys:** Various trips April to August 3. **Coverage:** By one observer, April 22; May 3, 10, 29; June 1, 4, 19, 20, 21, 25; July 7; August 3. Hours varied from 6 A.M. to (?) 6 P.M. **Weather:** Mild winter, with lots of icy weather, rainy spring and summer. **Census:** The number of pairs for each species follows, the preceding numbers being the numbers used on map. [In a letter last year Mr. Fawks wrote: "No nest was counted unless found or parents seen carrying food or with young."—Ed.] 1—E. Mourning Dove, 4N; 2—N. Barred Owl, 1N; 3—Yellow-billed Cuckoo, 1N; 4—Black-billed Cuckoo, 1Y; 5—E. Belted Kingfisher, 1Y; 6—E. Hairy Woodpecker, 3N; 7—N. Downy Woodpecker, 2N; 8—Red-headed Woodpecker, 2N; 9—Red-bellied Woodpecker, 1N; 10—N. Flicker, 3N; 11—Ruby-throated Hummingbird, 1N; 12—N. Crested Flycatcher, 2N; 13—E. Wood Pewee, 4N, 1Y; 14—Least Flycatcher, 1N; 15—N. Blue Jay, 4N; 16—E. Crow, 1N; 17—E. Cowbird, 1 female; 18—Baltimore Oriole, 3N, 1Y; 19—Bronzed Grackle, 1N; 20—E. Goldfinch, 1N; 21—English Sparrow, 16N; 22—Song Sparrow, 1N; 23—Red-eyed Towhee, 1N, 1Y; 24—Cardinal, 4N, 3Y; 25—Rose-breasted Grosbeak, 8N; 26—Indigo Bunting, 2N; 27—Scarlet Tanager, 1N, 1P; 28—Bank Swallow, 6000 holes, ⅗ filled; 29—Cedar Waxwing, 1N; 30—Red-eyed Vireo, 3N; 31—E. Warbling Vireo, 2N; 32—E. Yellow Warbler, 5N; 33—N. Yellow-throat, 1N; 34—Am. Redstart, 10N, 4Y; 35—Catbird, 8N, 1Y; 36—Brown Thrasher, 4N, 2Y; 37—House Wren, 5N, 2Y; 38—N. White-breasted Nuthatch, 1N; 39—Tufted Titmouse, 2Y; 40—Black-capped Chickadee, 1N, 2Y; 41—Wood Thrush, 7N; 42—E. Robin, 5N, 2Y; 43—E. Bluebird, 1N. **Total:** 43 species, 128 pairs, exclusive of Bank Swallows and English Sparrows. Large sections of Swallow Cliff were cut away since last year but the Swallows had rebuilt many of their homes. However, there is about a 40 per cent reduction over last year. No Carolina Wrens this year. Due to ice-coated brush, etc.? They are extending their range northward here. **Density:** 845 pairs per 100 acres, exclusive of Bank Swallows and English Sparrows. —ELTON FAWKS, Moline, Ill.

SECOND GROWTH RIDGE FOREST WITH CLEARINGS. Road, 2 acres. Clearings (made by CCC in 1935), 28 acres. Pine (half pitch and half short-leaf yellow—all age classes represented), 18 acres. Oak-hickory forest, 52 acres. All second growth, 4 to 20 inches in diameter. Relative abundance of species represented in this type: rock chestnut oak, 100; red oak, 75; white oak, 60; pignut hickory, 60; black oak, 55; post oak, 20; black-jack oak, 5; additional miscellaneous species, 30. All plant species native. **Size:** Exactly 100 acres. The 24 study sections of the area include 2.4 linear miles of ridge road and a belt 57 yards wide on either side of this forest truck road. The study strip's lateral boundaries, though artificial, nearly coincide with the abrupt transition between the xeric ridge top and the densely vegetated humid lower slopes.

Location: East end of Picnic Point Trail, Shawnee State Forest, Nile Township, Scioto County, Ohio. **Water:** None. No springs or water-courses. The road dividing the census strip is nearly everywhere exactly on the ridge divide, with abrupt steep slopes on either side. Both slopes are definitely xeric habitats for some yards down from the ridge top except for a few small moist pockets on the north facing slopes. **Edges:** The 2.4 miles of road have 4.8 miles of margin. The border between the long clear strips and the forest totals 4.7 miles. **Surveys:** Several preliminary trips and several night trips for nocturnal species. Regular censuses, April 23, May 30, June 14, 19, 23, 24, July 10, 29. **Coverage:** By *one* observer, April 23 (5-9 A.M.); May 30 (6-11 A.M.); June 14 (6 A.M.-1 P.M.), 19 (7 A.M.-2 P.M.); July 10 (7 A.M.-11 P.M.), 29 (7 A.M.-12 M.) By *both* observers, June 23 (6 A.M.-1 P.M.) and June 24 (7 A.M.-11 P.M.). Fieldwork exceeded 56 man-hours. **Weather:** Near normal throughout period. All days selected for the census work were clear or with light clouds, and without wind. **Census:** E. Mourn ng Dove, 1P, 2N; Black-billed Cuckoo, 1M, 1P; E. Whip-poor-will, 6M; Ruby-throated Hummingbird, 5P; E. Hairy Woodpecker, 1M, 4P; N. Downy Woodpecker, 3M, 3P, 2N; E. Wood Pewee, 3M, 2P; E. Crow, 3P, 1N; Carolina Chickadee, 2Y; Tufted Titmouse, 2Y; White-breasted Nuthatch, 2P, 1Y; E. Robin, 1M, 1P, 2Y, 1N; Wood Thrush, 1M, 4P; Blue-gray Gnatcatcher, 1M, 3P, 5Y, 1N; Cedar Waxwing, 1P; White-eyed Vireo, 1P; Yellow-throated Vireo, 3P; Red-eyed Vireo, 2M, 9P, 3Y, 2N; Black and White Warbler, 6P, 3Y; Worm-eating Warbler, 2P, 6Y; Blue-winged Warbler, 3P; Black-throated Green Warbler, 3M, 1P, 2Y; Cerulean Warbler, 2M, 6P; Pine Warbler, 2P, 2Y, 1N; N. Prairie Warbler, 4P; Ove .-bird, 13P, 3Y, 1N; Kentucky Warbler, 1P; Yellow-breasted Chat, 14P, 4Y, 4N; Hooded Warbler, 1M, 10P, 4Y, 1N; Am. Redstart, 2P, 5Y; E. Cowbird, 3P; Scarlet Tanager, 8P, 1N; Summer Tanager, 6P; E. Cardinal, 9P, 2Y, 2N; Indigo Bunting, 2M, 3P, 7Y, 1N; E. Goldfinch, 8P; Red-eyed Towhee, 1M, 6P, 3Y, 2N; E. Chipping Sparrow, 1M, 5Y, 4N. Three species nesting in 1937 were absent in 1938—Broad-winged Hawk, N. Flicker and N. Crested Flycatcher. One new species was present in 1938—the Cedar Waxwing. Three species were present in the same numbers each year and many others had nearly the same numbers each year. Twenty-two species nested in greater numbers in 1937. Sixteen species nested in greater numbers in 1938. Common breeding species of the region apparently unable to occupy this xeric ridge study area include: Ruffed Grouse, Screech Owl, Blue Jay, Bronzed Grackle, Meadowlark, Phoe e, Acadian Flycatcher, Starling, Carolina Wren, Catbird, Yellow Warbler, Yellow-throat, Field Sparrow, Grasshopper Sparrow, and Song Sparrow. **Total:** 38 breeding species, 265 pairs (25 nests located). (In 1937, 40 species, 268 pairs.) **Density:** 265 pairs per 100 acres (same tract in 1937, 268 pairs per 100 acres).—LAWRENCE E. HICKS, FLOYD B. CHAPMAN, Ohio State University, Columbus, Ohio.

PINE BARRENS AND CEDAR BOG. Typical of hundreds of square miles of south Jersey pine barrens. Through a large part of the census area a forest fire swept in 1930. The pitch pine slowly recovered after the fire, as only the pitch pine can, so that a healthy stand of second-growth pines has completely replaced the old first-growth (average height 7 feet). The scrub oaks are in the same state today as they were previous to 1930—fully or nearly fully grown (average height 5 feet). The ground-cover is predominantly blueberry shrubs of various species. The cedar bog remains almost unchanged since the fire. Cedars are not capable of regrowth after fire as are the pitch pines. There are many second-growth cedars in the bog, however, and a small number of first-growth trees untouched by the 1930 calamity.

First-growth trees are pitch pine (*Pinus rigida*), coast white cedar (*Cupressus thyoides*), and red maple (*Acer rubrum*), with respective heights of 40 to 50 feet, 40 feet, and 40 to 50 feet and DBH of 10 inches, 5 inches, and 8 inches. Second growth includes pitch pine (7 feet high), post oak (*Quercus minor*), dwarf chinquepin oak (*Q. prinoides*) and bear cat oak (*Q. ilicifolia*)—all 5 feet high. For a more complete list of the vegetation, including ground-cover, see description appended to map. **Size:** Cedar bog, 4.22 acres; pine woods, 71.78 acres; total, 76 acres. **Location:** Pine Lake Park, New Jersey. Six miles north of Toms River, 3 miles south of Lakehurst, and 3.5 miles west of State Highway No. 4 (Atlantic City Highway). **Water:** One small stream passing through a cedar bog. The depth of water in the bog varies from 6 inches to 5 feet. **Edges:** About 282 yards edge between cedar bog and pine woods; 525 yards edge on either side of stream (1050 yards total). Road shown on map is not really an edge in the opinion of the writer and is thus discounted. Total edge, 1332 yards. **Survey:** Area under observation since 1935. February 6, March 13 and April 10 this year. **Coverage:** By one observer. May 22, June 5, 19 and daily observations from June 26 to July 15. Total number of field hours, 100. **Census:** Nests found indicated on map. Nesting-place indicated. 1-E. Mourning Dove, 1P (2Y) in *Acer rubrum;* 2-Black-billed Cuckoo, 1P; 3-E. Whip-poor-will, 1P; 4-E. Nighthawk, 2P (2Y) on ground; 5-Ruby- hroated Hummingbird, 1P; 6-N. Flicker, 3P (3Y) in *Pinus rigida;* 7-N. Downy Woodpecker, 1P in *Pinus rigida;* 8-E. Kingbird, 1P; 9-N. Crested Flycatcher 2P (1Y); 10-E. Wood Pewee 2P in *Pinus rigida;* 11-E. Crow, 1P (1Y); 12-E. House Wren, 4P (4Y) in *Acer rubrum;* 13-Catbird 1P; 14-Brown Thrasher, 3P (1Y); 15-E. Robin, 4P (12Y) in *Acer rubrum;* 16-E. Bluebird, 1P (4Y); 17-White-eyed Vireo 1P; 18-E. Warbling Vireo 1P; 19-Black and White Warbler, 1P (2Y) in *Pinus rigida;* 20-N. Pine Warbler, 7P (12Y) in *Pinus rigida;* 21-N. Prairie Warbler, 4P (4Y); 22-N. Yellow-throat, 8P (6Y); 23-E. Red-wing, 3P (4Y); 24-Baltimore Oriole, 1P (1Y) in *Acer rubrum;* 25-Purple Grackle, 1P (1Y); 26-Cowbird, 1P (1Y fed by N. Yellow-throat); 27-Red-eyed Towhee, 12P (20Y) 5 nests on ground; 28-E. Chipping Sparrow, 2P (6Y); 29-E. Field Sparrow, 4P (8Y) on ground; 30-E. Song Sparrow, 1P. **Total:** 30 species; 76 pairs (95 young; 21 nests found). Species resorting to cedar bog to feed: Black Duck, American Bittern, Black-crowned Night Heron. Species seen flying over pine woods and bog: Turkey Vulture, Killdeer, Tree Swallow, Barn Swallow, Purple Martin, Goldfinch, Red Crossbill. Species characteristic of area but not found on census plot: Bob-white, Carolina Chickadee, Cedar Waxwing. **Density:** 100 pairs per 100 acres. **Conclusions:** The study area today (1938) is virtually the same as it was previous to the fire in 1930, except that in the burned area first-growth trees are few. Second-growth trees (both Pinus and Quercus) in burned area outnumber second-growth trees in the untouched area. This accounts for what appears to me to be an ecological equilibrium between the burned and unburned habitats. Species seem not to choose one section rather than the other when selection of nesting site is made. The density of both types of habitat (burned and unburned) appears to be surprisingly stable. To me no appreciable difference in density occurs. The eight years elapsing since the fire have seen almost incredible changes take place, and the area can be classed as "pine barrens and cedar bog" without special designation as to burned or unburned areas. There is likewise no great difference in the speciation of the burned or unburned areas. Bird-boxes were

erected just outside southeast corner of census tract and were used by the following: Purple Martin, 3P; House Wren, 4P; Robin, 1P; Bluebird, 1P.—DAVID FABLES, Roselle Park, N. J.

UPLAND PINE-HEMLOCK-RED MAPLE FOREST. Forest crown consisting of widely spaced gigantic white pines 100 to 200 feet in height, and a dense understory of young and adult red maples and hemlocks, which locally form dense woods of mature aspect; some oaks (*Quercus prinus, Q. borealis, Q. coccinea*); shrub stratum well developed, consisting of witch-hazel, young black cherries, and various species of Diervilla, Lonicera, Viburnum, Gaylussacia, and Vaccinium; ground-cover consisting chiefly of Myanthemum, Aralia (2 species), and ferns (*Dryopteris spinulosa*, Polypodium, and *Osmunda cinnamomea*, with Pteridium on drier sites); large areas of *Vinca minor* (adventive) and many impenetrable thickets of greenbrier (*Smilax rotundifolia*). There are three or four small clearings and one small garden, the clearings in various stages of secondary succession, featured principally by young red maples, and dense tangles of *Rubus allegheniensis* and the fern *Dennstædtia punctilobula*. Interference by man has been continuous for years, but has been of no great importance except in the vicinity of the cabins, where the deciduous elements of the understory have been largely eradicated. **Size:** Approximately 75 acres. **Location:** On the north end of Little Mountain, on the boundary between Lake and Geauga Counties, Ohio, 25 miles east of Cleveland. **Topography:** The flat top of a conglomerate mesa, bounded by ledges and cliffs from 5 to 50 feet in height. Parts of the sandstone cap rock have fallen away from the edges, forming an outer fringe of immense boulders and rocky 'islands.' Numerous deep crevasses and caves penetrate inwardly from the edges of the mesa. The terrain falls away evenly on all sides of Little Mountain to the Lake Erie plain and to two valleys, all of which are about 500 feet lower than the top of the mesa. **Edge:** The only edges of the forest are about the small local clearings near the cabins, but the cliffs make a pronounced 'step' or break in the more or less continuously undulating level of the crown of the surrounding forest. **Surveys:** Regular weekly censuses made, with occasional interruptions, since October, 1932. Censuses made for this report numbered 5 in April, 7 in May, and 15 in June. Hours varied between 8 A.M. and 11 P.M. and totaled over 150 hours. **Weather:** Unusually mild throughout the spring, and normal for the station during June and July; precipitation normal until May, when there was a slight deficiency; somewhat excessive during June (6.09 inches). Little Mountain normally has an annual precipitation from 10 to 20 inches greater than that of Cleveland, 25 miles away. The severe frosts that seriously set back vegetation in Ohio during May missed Little Mountain entirely, but a severe epidemic of canker-worms had a comparable effect on the foliage of the deciduous trees. **Census:** N. Turkey Vulture, 1P; Sharp-shinned Hawk, 1N; E. Mourning Dove, 1N (2 broods); Black-billed Cuckoo, 2N, first records of this species in six years on area; E. Barred Owl, 1N; Whip-poor-will, 1P; Chimney Swift, at least 2P; N. Flicker, 1N; N. Pileated Woodpecker, 2N; Hairy Woodpecker, 1N, 1P; E. Kingbird, 1N, new record for area; N. Crested Flycatcher, 1N, 2Y, 1P; E. Phoebe, 10N, 1P, 15 broods in all; Acadian Flycatcher, 1Y; E. Wood Pewee, 4P; Blue Jay, 1N, 1Y; Crow, 1N; Black-capped Chickadee, 6N, 1P; Tufted Titmouse, 1N, 1P; White-breasted Nuthatch, 3Y; Red-breasted Nuthatch, 1N, 1Y, first breeding records for area; Ohio House Wren, 6N, 2P; E. Robin, 4N, 1P, 1Y, 9 broods in all; Wood Thrush, 4N, 1P, 6 broods in all; Red-eyed Vireo, 3N, 2P; Black-throated Green Warbler, 5Y, 5P (1 pair raised Cowbird); Ovenbird, 6N, 3Y; La. Water-Thrush, 1N, 1P; Hooded Warbler, 4N, 3Y, 2P, 11 broods in all (1 pair raised Cowbird); Am. Redstart, 1Y; E. Cowbird, at least 3 young raised; Scarlet Tanager, 4Y, 1UM; Cardinal, 1P (first breeding record for area); Rose-breasted Grosbeak, 1N, 1Y, 1P; Indigo Bunting, 1N, 1P; Red-eyed Towhee, 1Y, 2P; Slate-colored Junco, 4Y, 3P (1 pair raised Cowbird); E. Chipping Sparrow, 2N, 1Y; Miss. Song Sparrow, 1Y, 2 broods in all. **Total:** 131 pairs (31P, 70N, 29Y, 1UM). **Density:** 174 pairs per 100 acres (113 pr. in 1935; 167 in 1936; 135 in 1937). Besides the above-listed pairs, the following nested outside the area but foraged regularly within it: N. Red-tailed Hawk, 1P; Broad-winged Hawk, 1P; E. Ruffed Grouse, 2M; Great Horned Owl, 1; Black-billed Cuckoo, 1; N. Pileated Woodpecker, 1P; Hairy Woodpecker, 1P; E. Downy Woodpecker, 1P; Red-bellied Woodpecker, 2P; N. Crested Flycatcher, 1P; Black-capped Chickadee, 1P; Purple Martin, about 20 individuals; Blue-headed Vireo, 1P (nested within the area in 1937); Cerulean Warbler, 2P; Oven-bird, 2P; Am. Redstart, 1P; Rose-breasted Grosbeak, 1P. **Comment:** The 1938 breeding season was characterized by an unusually high percentage of successful nestings and by a seriously disturbed migration period. The latter caused some astonishing records on Little Mountain, and in view of the fact that some of the unusual boreal species are still on Little Mountain as this paper is submitted to the editor, it seems desirable to record them: Least Flycatcher, 1 bird on June 6, 2 on June 20, in the same place, apparently a male and female; Yellow-bellied Flycatcher, 2 on June 27; Olive-sided Flycatcher, 1 unmated male arrived on June 13, and was seen or heard daily until July 2, during which time the bird defended a territory against other large Flycatchers. On July 4, a typical migrating Warbler company was noted, consisting of 17 Black-throated Green Warblers, 6 Chestnut-sided, 1 Wilson's and 2 Pine Warblers. The last named individuals were not identified until two days later but have been recorded on every census since, including that of July 18 (the last covered for this paper). Apparently there are 2 males only. Blackburnian Warbler, 1 adult female, July 18; this species formerly nested on the area (1P, 1933; 2P, 1934). Winter Wren, 1 male in full song on July 4. There is no indication that any of these species nested this year. Cedar Waxwings and Goldfinches have not yet started nesting. Both species have been recorded irregularly to date. The terrain suitable for both is very limited.—B. P. BOLE, JR., Cleveland Bird Club.

UPLAND HICKORY-OAK FOREST. The wooded portion is made up of mixed hardwoods composed mainly of hickory and oak interspersed with aspen, sassafras, and sumac. There is typical substratum of shrubs, such as dogwood and species of Cratægus, Rhus, and Viburnum. The remainder is represented by grassy bottomland and swampy wooded sections which in the northeast corner is composed of alder, buttonbush, blue beech, and elm, and in the southeast corner of alder, sycamore, blue beech, and elm. In the northwest portion a six-year-old pine forest, covering about 3 acres, is rapidly dominating the previous vegetation. The change of slope from the bottomland to the cliff is characterized by such trees as tupelo, maple, ash, and walnut. The census area was formerly occupied by man, with small parts under cultivation. This resulted in the introduction of various shrubs and trees, some of which are attractive to birds, and the clearing of small areas which have been maintained in part, being represented now as small, grassy clearings. It is now the camping-site of the local Scout Council, which has erected numerous buildings, thus providing places for such

species as the Robin, Carolina Wren, and Phoebe to nest. A recent change in the habitat was effected when nine large trees, chestnuts and oaks, were cut down. The old mess-hall was torn down and a new camping-lodge erected about 100 yards south of the old building. **Size:** About 45 acres (1300 by 2000 feet). **Location:** Southern portion of Eden Township, Licking County, Ohio. **Topography:** Represented by a creek bottom and a steep valley wall with an outcrop of massive sandstone from 3 to 30 feet high. Elevation 1230, maximum relief 220 feet (U. S. G. S. maps). Water-courses to the extent of about 1140 yards. **Edge:** Provided by hardwood-pine margins, vegetational borders, clearings and trail-spaces. In total about 1290 yards. **Surveys:** Preliminary trips made throughout the winter months and on March 25, 27; April 22; May 19, 25. **Coverage:** June 13, 20, 22, 30; July 1, 12, 29; August 8, 26; total field hours, 71; many Boy Scouts assisted in the census. **Weather:** The unusual season characterized by an early vegetation probably induced some species to nest earlier than usual. One pair of Phoebes had a nest nearly completed by March 25. Hepatica was found in flower on the same date and on March 27 Ruffed Grouse were drumming. As reported to the seasonal editor for our region, 36 species established new arrival dates which far exceeds any previous year, the closest being in 1933 when 25 species broke their existing records. **Census:** E. Whip-poor-will, 1P; Ruby-throated Hummingbird, 2Y; E. Hairy Woodpecker, 1N; N. Downy Woodpecker, 1N; E. Phoebe, 2P (4N); Acadian Flycatcher, 1N; E. Wood Pewee, 1N; Carolina Chickadee, 1N, 1Y; Tufted Titmouse, 1N, 1Y; N. White-breasted Nuthatch, 1N; Carolina Wren, 1N; Wood Thrush, 1N; Blue-gray Gnatcatcher, 1N; Red-eyed Vireo, 3N?; Black and White Warbler, 1N; Cerulean Warbler, 2N; Oven-bird, 2N; La. Water-Thrush, 1N; Kentucky Warbler, 2N; N. Yellow-throat, 1N; Yellow-breasted Chat, 1N; E. Cowbird, 1P (1 egg in each of 2N of Red-eyed Vireo); Scarlet Tanager, 2N; E. Cardinal, 2N; Indigo Bunting, 2N; E. Goldfinch, 1Y; Red-eyed Towhee, 2N; E. Chipping Sparrow, 1N; E. Field Sparrow, 3N; Miss. Song Sparrow, 1N. **Total:** 2 pairs, 38 nests, 5 pairs with young (or 45 pairs). Of the above, Field Sparrow, 1P, fed entirely outside the area; other species, about six, did so to a lesser degree which could not be determined exactly because of observational difficulties. All species marked 'M' on the map, except the Black-throated Green Warbler and one Indigo Bunting near the north margin, represent males having territories within the census area but which nested outside of it. Birds nesting outside the census tract but visiting it for food or water: E. Red-shouldered Hawk, 1P (2 Young); E. Bob-white, 1P; Red-eyed Vireo, 2P; Indigo Bunting, 2P; Acadian Flycatcher, 2P. Wandering birds which have not yet nested or may already have done so, etc.: Great Blue Heron, E. Green Heron, Mourning Dove, Yellow-billed Cuckoo, Chimney Swift, N. Flicker, N. Crested Flycatcher, Barn Swallow, Purple Martin, N. Blue Jay, E. Crow, Catbird, E. Robin, Cedar Waxwing, Starling, White-eyed Vireo, Blue-winged Warbler, English Sparrow, Summer Tanager, E. Goldfinch. Waif or late transient migrant: Black-throated Green Warbler. **Total:** Nesting adults, 90 (in 1937, 120); regular visitors, 16; irregular visitors (about 6 individuals per trip), 6; migrant, 1. **Density:** 250 adults per 100 acres. Max. density (adults, young, etc.) July 12, 306 ind. per 100a. **Comment:** Despite the added amount of field-work and improvements in methods which were designed to make the work somewhat more accurate there is a growing realization of the magnitude and complexity of the task with its many factors and problems influenced by local conditions and the nature of the census area. The increase in the density figures may in part be accounted for perhaps by the increased number of hours in the field and to some extent to a refinement in the methods used. That the results of this census are somewhat lower than those obtained for similar areas can be partially and to a greater extent explained by the fact that the wooded portion of the census tract is only approximately two-thirds the acreage of the total tract. The remainder is grassy bottomland and contributes very little to the total density. Another factor which probably does contribute to a somewhat lower density is the fact that the area for the greater part of the summer is the home of numerous Scouts who in their various activities probably tend to decrease the population of those shyer species. This is indicated in a comparison of densities taken in the first few years of the camp history and those of recent date. —A. H. Claugus, Newark, Ohio.

CONIFERS AND HARDWOODS IN CANADIAN ZONE. Over two-thirds of area covered by mixed woodland consisting of white pine, white and black spruce, tamarack, white cedar, hemlock, sugar, mountain, and striped maple, white ash, beech, white and yellow birch, alder, and poplar. The above portion has not been subject to lumbering operations for over fifty years. In recent years the cutting of firewood has produced the 'open woods' shown on the enclosed sketch map. The remaining third consists of shrubbery, second-growth conifers, and open grassland. No disturbance by grazing or fire. **Size:** 50 acres (71 acres studied in 1937). **Location:** Upnorth Bird Sanctuary, Parish of St. Sauveur, Terrebonne County, Province of Quebec, Canada. **Water:** One dew-pond and two small streams. **Edge:** Approximately 5000 feet. **Surveys:** April 24 and May 14. **Coverage:** One observer. May 15, 28, 29; June 12, 19, 26; 4.30 A.M.–9.30 P.M. Field-work totals 41.1 man-hours. **Census:** 3-Canada Ruffed Grouse, 2Y; Ruby-throated Hummingbird, 1P; 34-N. Flicker, 1N; 36-Yellow-bellied Sapsucker, 1N; 59-N. Hairy Woodpecker, 1?; 35-N. Downy Woodpecker, 1P; 58-N. Crested Flycatcher, 1P; 38-E. Phoebe, 1P; 39-E. Wood Pewee, 2P; 13-Black-capped Chickadee, 2P; 10-Red-breasted Nuthatch, 1P, 1M; 11-E. Winter Wren, 1N, 1P, 1M; 26-E. Robin, 1N, 1P, 2M; 16-E. Hermit Thrush, 4P, 3M; 52-Olive-backed Thrush, 3P, 1M; 31-Veery, 1Y, 1P, 1M, 1?; 18-Golden-crowned Kinglet, 2P, 1M; 56-Cedar Waxwing, 1Y, 1P; 47-Red-eyed Vireo, 3P, 2M; 12-Black and White Warbler, 3P; 17-Nashville Warbler, 2M; 41-Magnolia Warbler, 2P, 2M; 20-Cape May Warbler, 1M; 5-Black-throated Blue Warbler, 1P, 2M; 14-Myrtle Warbler, 2P, 1M; 6-Black-throated Green Warbler, 1N, 5M; 21-Blackburnian Warbler, 1P, 3M; 46-Chestnut-sided Warbler, 1P; 24-Bay-breasted Warbler, 1M; 4-Oven-bird, 1N, 2P, 1M; 53-Mourning Warbler, 1M; 51-Canada Warbler, 1N, 3P, 1M; 22-Am. Redstart, 3P, 1M; 25 E. Cowbird, 2P, 1M (1 Juv. being fed by female S. L. Junco, and another by a female Song Sparrow); 49-Scarlet Tanager, 1P, 1M; 50-Rose-breasted Grosbeak, 2P, 1M; 7-E. Purple Finch, 4P, 1M; 37-E. Goldfinch, 1P, 1M; 28-E. Savannah Sparrow, 2P, 1N; 29-E. Vesper Sparrow, 5P; 15-Slate-colored Junco, 1Y, 4P, 2N, 2M; 23-E. Chipping Sparrow, 1Y, 2N, 8P, 2M; 8-White-throated Sparrow, 1N, 6P, 1M; 33-E. Song Sparrow, 1Y, 4P, 1M. **Total:** 43 species, 82P, 12N, 6Y, 45M, and 2 misc. birds (or 146 probable pairs); 10P also used nesting boxes: 27-Tree Swallow, 5N; 55-E. House Wren, 2N; 30-E. Bluebird, 1Y, 1N; and 40-Starling, 1Y; 8P nested on the area but fed largely outside it: 2-Duck Hawk, 1N (3Y); 9-E. Crow, 3N; and Tree Swallow (above). E. Goshawk, Broad-winged Hawk, Barn Swallow, Chimney Swift, E. Kingbird, Canada Jay, N. Blue Jay, and White-winged Crossbill sometimes fed within the area but

bred elsewhere. The total number of nesting birds was therefore 49 species and 160 probable pairs. **Densities:** The environment carried this year 292 pairs per 100 acres; management (boxes) raised this 10 pairs and added 10 to the 8 pairs feeding outside the study tract. The total density was thus 320 pairs per 100 acres. **Comment:** The increase in density over that of 1937 (216 pairs per 100 acres) is no doubt due to the following factors: increase of four species over 1937; increased management (six more bird-boxes and winter feeding which was continued into the breeding season); greater knowledge of habitats in the sanctuary; more efficient coverage; and reduction in the size of the study area from 71 to 50 acres.—J. D. Cleghorn and J. H. Molson, Province of Quebec Society for the Protection of Birds.

WOODED SLOPE with mixed hardwoods of all ages. Same area on a northeast slope as studied in 1937; no perceptible vegetational changes except for the gradual increase of shading in the two acres of locust which has caused a slight diminution in the amount of blackberry. **Size:** 39.93 acres (I am greatly indebted to Robt. G. Kramer for his kindness in measuring this instrumentally; the figure is 3 per cent larger than the 38.7 acres originally reported as paced). **Location:** Sprain Ridge, Yonkers, N. Y. **Topography:** Top of ridge (60 yards) and slope (190 yards). **Edge:** Considerable; see 1937 report. **Surveys:** Weekly visits April to July, 1936 and 1937. **Coverage:** April 30; May 8, 17, 22, 25, 29; June 2, 5, 9, 16, 19, 30; July 16; hours varied from 5.10 A.M. to 9.20 P.M. (daylight-saving time), total 54. **Weather:** The preceding breeding season was marked by high temperatures, light wind movement and by sub-normal precipitation; the winter was remarkably open with mean temperatures above normal, snow never over 2 inches on the ground and very little glaze on trees and shrubs. **Census:** Territories were mapped; not all the females were found for the following pairs. Pheasant, 1; N. Flicker, 2; N. Downy Woodpecker, 2; N. Crested Flycatcher, 2; E. Wood Pewee, 1; E. House Wren, 1; Black-capped Chickadee, 1; Veery, 9; Yellow-throated Vireo, 3; Red-eyed Vireo, 14; Black and White Warbler, 3; Worm-eating Warbler, 8; Blue-winged Warbler, 3; Chestnut-sided Warbler, 3; Oven-bird, 19; Kentucky Warbler, 1 (UM?); N. Yellow-throat, 2; Hooded Warbler, 3; Am. Redstart, 22; Scarlet Tanager, 1N; Red-eyed Towhee, 4; E. Song Sparrow, 4. **Total:** 22 species, 109 probable pairs; in 1937, 117 pairs, 2 unmated males. Fed outside tract: E. Crow, 3N. Visiting birds averaged about 10 per field-trip, the most frequent being N. Blue Jay, E. Robin, and Indigo Bunting. **Density:** Assuming all males were mated, 545 nesting birds per 100 acres, 15 adults which fed elsewhere, and 25 adult birds which visited the tract for food or water. **Comment:** The corresponding densities for 1937, corrected for acreage, were 590, 16 and 4. Some of the decrease in the first category may possibly be due to a lower efficiency in the field-work (less early-morning observation in 1938). The three predominant species, Redstart, Oven-bird and Red-eyed Vireo, had conspicuous territories; there were 54 of these in 1937, and 55 in 1938.—J. J. Hickey.

CLIMAX RED AND WHITE SPRUCE FOREST. Twenty-five acres of virgin spruce; 5 acres partially cleared, containing buildings, weeds, bushes, birches, and young spruce. **Size:** 30 acres. **Location:** Audubon Nature Camp, Hog Island, Muscongus Bay, Maine. **Water:** One small bog and numerous temporary pools. **Edge:** The area is a peninsula. **Survey:** Several hours almost daily from June 7 to August 10; at least 200 man-hours. **Coverage:** By 2 observers. **Census:** Parentheses indicate second broods. Sum of numbers not in parentheses equals definite breeding pair, except in singing males. Osprey, 1N; N. Flicker, 1N; E. Crow, 2N; Black-capped Chickadee, 1N (2N), 2Y; E. Robin, 4N; E. Hermit Thrush, 1N; Olive-backed Thrush, 3N (1N), 1Y (1Y); Golden-crowned Kinglet, 5Y, 2M; Cedar Waxwing, 1N; N. Parula Warbler, 5N (1N), 3Y, 2M; Magnolia Warbler, 4N, 3Y, 2M; Cape May Warbler, 1Y; Myrtle Warbler, 1N, 5Y, 1M; Black-throated Green Warbler, 6N, 4Y, 1M; Blackburnian Warbler, 2Y, 1M; Bay-breasted Warbler, 1M; American Redstart, 1N (2N), 2Y; E. Purple Finch, 1N; Slate-colored Junco, 1N (2N), 5Y (1Y); E. Chipping Sparrow, 2N, 3Y; E. Song Sparrow, 3N (1N), 1Y (1Y). **Total:** 21 species, 75 pairs nesting, 10 males on territories daily but no further nesting evidence. **Density** (including males as pairs): 283.33 pairs per 100 acres. Similar censuses on these 30 acres in 1936 listed 75 pairs representing 22 species; 1937, 74 pairs representing 19 species, and this year 85 pairs representing 21 species. Of course, many birds not breeding on our island were recorded. Cormorants, Gulls, Terns, Guillemots, Ducks and shore-birds ere seen. Wide ranging birds such as Bald Eagles, Ravens, Swallows, Swifts, and Great Horned Owls were noted. As in the past two years, there seemed to be a great floating population. White-winged Crossbills, Siskins, Nashville Warblers, Solitary Vireos, and a score of others would show up for a day or so and then disappear. Flicker and Osprey were the only two nesting species that fed outside the study area.—Joseph J. Cadbury and Allan D. Cruickshank.

CLIMAX BEECH-MAPLE FOREST. Mature climax forest of beech and sugar maple, with hemlock and a few other species present along ravines and on edges of bluffs. A dark forest with high relative humidity. Ground-cover relatively meager, except in early spring when herbaceous vegetation is abundant. Under complete protection by Park Board rules since 1925. **Size:** About 65 acres. **Location:** Mayfield Township, Cuyahoga County, Ohio. In southwest section of North Chagrin Reservation of Cleveland Metropolitan Park System. **Topography:** Sloping upland cut by steep ravines between bluffs overlooking Chagrin River valley. **Edges:** Forest edge bordering on parking lot and picnic-ground 500 feet. Bridle-paths approximately 1 mile. Foot-trails approximately 3 miles. Occasional grape tangles making open places in forest comparable to 'edges.' **Surveys:** Area has been under intensive ecological study including breeding-bird population since 1931. **Coverage:** April 16; May 11, 16, 26, 31; June 6, 8, 13, 15, 17, and a few scattering dates in July for brief periods only. Hours varied from 7 A.M. to 6 P.M. Probably totaled about 30. **Census:** Yellow-billed Cuckoo, 1M; Barred Owl, 1PNY; Hairy Woodpecker, 2P; Downy Woodpecker, 3P; Crested Flycatcher, 1PN; Phoebe, 2PN; Acadian Flycatcher, 5M; Wood Pewee, 6M, 1N; Blue Jay, 1PN; Black-capped Chickadee, 1P, 1Y; Tufted Titmouse, 3M, 2Y; White-breasted Nuthatch, 3P; Carolina Wren, 1P (first nesting record for area); Robin, 1P; Wood Thrush, 5P, 2Y, 3N; Yellow-throated Vireo, 1N; Red-eyed Vireo, 18M, 4N; Black-throated Green Warbler, 1M; Cerulean Warbler, 1M; Oven-bird, 13P, 1N; La. Water-Thrush, 2Y; Hooded Warbler, 10P, 3N; Redstart, 5P, 6M, 1N; Cowbird, present; Scarlet Tanager, 3P, 2M; Cardinal, 3PN; Rose-breasted Grosbeak, 2M; Red-eyed Towhee, 1P. **Total:** 122 pairs. **Density:** 180 pairs per 100 acres (189 in 1937). In addition to those species listed as breeding pairs the following were noted as visitors to the area: Sharp-shinned Hawk, Red-shouldered Hawk, Ruffed Grouse, Flicker, Pileated Woodpecker, Crow, and Goldfinch.—M. B. Walters and Arthur B. Williams, Cleveland Bird Club.

CANYON WITH TREES AND BRUSH ALONG SMALL MOUNTAIN STREAM. Good stand of

alders, laurels, maples, willow, live-oaks and a few buckeyes; brush, heavy in places, of wild rose, wild grape, poison oak, wild blackberry, sweet-scented shrub, chamise, chaparral broom, etc. **Size:** About 40 acres. **Location:** Green Valley, 4 to 6 miles northwest of Cordelia, Solano County, Calif. Area covered: 100 feet to each side of Green Valley Creek for a distance of 1½ miles. **Topography:** Bottom of canyon with small mountain stream, 2 to 4 feet wide, traversing heavy boulders, elevation between 200 and 500 feet. **Surveys:** Infrequent trips for 15 years; mapping completed April 23, 1938. **Coverage:** April 23; May 14, 21, 26; June 21; July 16 (Stoner). Hours varied from 6 A.M. to 8 P.M., man-hours totaled 60. **Weather:** Normal throughout period; clear on all trips; no precipitation; rainfall previous winter above normal. **Census:** California Quail, 1Y; W. Mourning Dove, 2N; Anna's Hummingbird, 1N; Cabanis's Woodpecker, 2N; Willow Woodpecker, 1N; Ash-throated Flycatcher, 1P; W. Flycatcher, 6N; W. Wood Pewee, 1P, 1N; Tree Swallow, 4N; Blue-fronted Jay, 1N; Nicasio Jay, 4N; Plain Tit, 1Y; Bush-Tit, 1Y; Pallid Wren-Tit, 2P; W. House Wren, 7N; W. Robin, 1N; Russet-backed Thrush, 1P; W. Gnatcatcher, 1P; Cassin's Vireo, 1Y; W. Warbling Vireo, 5N; W. Yellow Warbler, 3P; Black-throated Gray Warbler, 1P; W. Chat, 1P; Dwarf Cowbird, 1P; W. Tanager, 2P; Black-headed Grosbeak, 8N; Lazuli Bunting, 1P; House Finch, 5N, 1Y; Green-backed Goldfinch, 2P, 2N; Sacramento Towhee, 5P, 3N; Sacramento Brown Towhee, 8N; Marin Song Sparrow, 2N. **Total:** 32 species, 90 pairs. **Density:** 225 pairs per 100 acres (in 1937, 215 pairs). Frequent visitors to area, though nesting outside: W. Black Phoebe, 1P; Brewer's Blackbird, 8P; Turkey Vulture, 6P (in air). About 100 migrating Cedar Waxwings resting in alders over the stream within the area on May 21. Visiting birds averaged 35 individuals per trip. All nests found and considered to be second sets of pairs already recorded were omitted from the census. The slightly larger density may be due to a more thorough knowledge of the area rather than to an increase in the number of pairs. Final density, 485 adults per 100 acres.—J. DUNCAN GRAHAM, EMERSON A. STONER, Benicia, Calif.

WOODED RAVINE WITH STREAM AT BOTTOM. Large trees mainly of sugar maple and beech in about equal proportions, with a few oaks, tulip, basswood, and sycamore. Understory of witch-hazel, spicebush, and maple-leaved viburnum. **Size:** Approximately 25½ acres. **Location:** East branch of Euclid Creek, in the Euclid Creek Reservation of the Cleveland Metropolitan Park System, South Euclid, Cuyahoga County, Ohio. **Topography:** A narrow, steep-walled ravine, with small stream at bottom having steep gradient. **Edge:** Enclosed on all sides by wooded slopes of ravine walls. Beyond these, at top, largely open fields. At lower end of ravine 2 concrete bridges and a small clearing. **Surveys:** Occasional visits to the area during last few years have given some familiarity with it. **Coverage:** May 28; June 4, 12, 17, 23; July 4, 10, 24; August 14. Hours varied from 6 A.M. to 7 P.M. Total hours about 40. **Weather:** Normal for season at time of census taking. **Census:** Belted Kingfisher, 1P; Flicker, 1Y; Crested Flycatcher, 1P, 1M; Phoebe, 2P; Wood Pewee, 4M; Crow, 1Y; Black-capped Chickadee, 1Y; White-breasted Nuthatch, 3P; Catbird, 1P; Robin, 8P; Red-eyed Vireo, 14M; Oven-bird, 5P; Cowbird, 1P; Cardinal, 1M; Goldfinch, 1P; Red-eyed Towhee, 1P, 1M; Song Sparrow, 1P. **Total:** 49 pairs. **Density:** 190 pairs per 100 acres. Regular visitors not included as breeding in the area were: Spotted Sandpiper, 1, Blue Jay, 1, Tufted Titmouse, 1.—JOE CORBE, Cleveland Bird Club.

COUNTRY ESTATE. Dwellings, barns, and other buildings; lawns, orchards, gardens, flowerbeds, and other human modifications. There is a large variety of trees and shrubs and other plantings as well as a modified hard maple grove with thick underbrush. Most of the area may be considered a man-made forest-edge type of habitat except for about 1½ acres in the maple grove. **Size:** 15 acres. **Location:** Hillcrest Farm, Gates Mills, Ohio, 13 miles east of the center of Cleveland. The estate is on the top of the west side of the Chagrin River valley, the river being about a mile away, and slopes gently to the east. Elevation is about 1000 feet above sea-level. **Water:** Three small ponds formed by damming the outlet of a spring, also bird baths and lawn sprinklers, furnish plenty of available water. **Edges:** Bordered by country roads on two sides, beyond which are open fields and another estate; bordered by farmland on the east and an extensive forested area on the north. **Surveys:** Contact with the area extended from early April to late August, with one or two visits each week during April and May and daily contacts throughout the summer. The census is based on observations, on number of birds trapped for banding purposes, and on number of nests located. **Census:** Chimney Swift, 2P (3N); Ruby-throated Hummingbird, 2P (1N); Flicker, 1N; Downy Woodpecker, 1P; Crested Flycatcher, 1N; Phoebe, 2P (3N); Wood Pewee, 2P; Barn Swallow, 1N; White-breasted Nuthatch, 1P; House Wren, 11P (17N); Catbird, 5P (8N); Robin, 12P (24N); Bluebird, 2P (4N); Cedar Waxwing, 1N; Starling, 4N; Yellow-throated Vireo, 1P; Red-eyed Vireo, 2N; Blue-winged Warbler, 1P; Yellow Warbler, 2P; Redstart, 1N; English Sparrow, 9P (19N); Cowbird, 1P; Cardinal, 1P; Goldfinch, 2P; Towhee, 1P; Chipping Sparrow, 6P (12N); Song Sparrow, 9P (6N). **Total:** 108 nests, 84 pairs, 27 species. **Density:** 5.6 pairs per acre; 560 pairs per 100 acres.—S. C. KENDEIGH, E. P. ODUM, R. E. HUGGINS, Cleveland Bird Club.

CITY PARK. Two rugged hills with considerable outcropping of schist are separated by a deep gorge facing the north. Most of one ridge and the gorge (about one-third of the study tract) rather thickly grown with a very old and tall stand of oak, tulip, and maple. Underbrush has been cut in some places and consists chiefly of viburnum and spicebush; young trees are also present. Other hill is thinly grown with oak, some tulip and a large variety of other trees. However, the hill is mostly grassy except for bramble patches, sumac groves, and scattered groups of trees. Within the past year, the Harlem River, which forms the northern boundary of the park, has been straightened out. Previously, the river made a sharp turn, difficult for navigation. The cutting of the short-cut through the peninsula around which the river originally flowed, destroyed many cattails bordering the river. The old route has not been filled in but a creek, branching off into the park, has been filled in halfway, destroying the best of the cattail area. An addition to the Henry Hudson Parkway, running through the park, was made in order to have two one-way roads. In constructing the road a great deal of the western slope was cut away destroying one of the best nesting-places. **Size:** Approximately 140 acres (not including ball-fields on the east). **Location:** Inwood Hill Park, northern tip of Manhattan Island, New York City, N. Y. **Water:** Hudson River nearby on west; Harlem River on north; about a dozen scattered springs. West ridge relatively dry and windswept on top. **Edge:** Numerous paths and roads in and around park. Henry Hudson Parkway runs through west end of park. Edge immeasurable. **Coverage:** By one observer. Twenty-six trips, both in A.M. and P.M., between April 23 and July 19; average three hours a trip. Total field-work about 78 hours. Weather normal. Unfortunately, since less

time was spent last year and the observer had less experience, this year's census cannot be compared with last year's census of the same area to get results showing the effects upon the bird-life due to man's interference with the natural environment. Therefore, although the bird-population has remained the same or perhaps decreased, this year's census shows an increase. **Census:** Bob-white, 1N; Ring-necked Pheasant, 1Y; N. Flicker, 4N, 4P; N. Downy Woodpecker, 1P; N. Crested Flycatcher, 1P; E. Phoebe, 1N; N. Blue Jay, 1P, 1N; White-breasted Nuthatch, 1Y, 1N; E. House Wren, 1P, 1N; Catbird, 6P, 10N; Brown Thrasher, 1P, 1Y, 7N, 1M; E. Robin, 27N, 3Y, 6P; Wood Thrush, 7N, 8P; Starling, 1Y, 2N, 9P; Red-eyed Vireo, 23P; Northern Yellow-throat, 1P, 2Y; Am. Redstart, 1M, 1P; E. Red-wing, 2N; E. Cowbird, 5P; Indigo Bunting, 2P; Red-eyed Towhee, 1Y, 1P; E. Chipping Sparrow, 3Y; E. Song Sparrow, 28P, 3N, 2Y. **Total:** 23 species; 181 nesting pairs; also present, a small Black-crowned Night Heron roost (no nests), Chimney Swift, 1N; and E. Belted Kingfisher, 1N. Birds in this roost have decreased about 70 per cent due to construction of canal and filling in of creek. Other birds which frequently visited the parks were Purple Grackle, Eastern Crow. **Density:** 129 nesting pairs per 100 acres.—HENRY KARSCH, JR.

WOODS, THICKETS AND FIELDS. Repeated surveys of the 160 acres of this complex type at Sewickley, Pa., have convinced me that the limited time available for field-work, compared to the size of the study area, preclude any possibility of high observational efficiency. It is now my opinion that the counts reported for 1937, especially in the cases of the more common species, are unreliable. On the basis of this experience, a more modest undertaking is projected for next year, when we look forward to being able to offer something more valuable.—FRANK C. SCHROEDER, JR.

SHORT-GRASS PLAINS (Mesquite subtype). Dominantly buffalo-blue grama grassland having scattered small mesquite (averaging 6 to 8 feet). Heavy grazing has kept the grass down to 3 to 4 inches, and secondary grasses and forbs are common. Vegetation and topography typical of much of the rangeland of the county. **Size:** About 25 acres (less pond of .64 acres) square. **Location:** Northeast corner, Section 28, G & M, Block No. 19, 14 miles north of Amarillo, Potter County, Texas. **Topography:** Even, gentle, northward slope. **Surveys:** Mapped June 4, 1938. Vegetation survey June 26, 1938. Bird censuses June 4, 5, 11, 20, and 26, 1938; July 2, 1938. Hours 6 A.M. to 6 P.M., total 35. **Weather:** About average for 3 months previous and during census period. **Maps:** No. 1. Location of plot and extent of habitat. No. 2. Vegetation map. No. 3. Cassin's Sparrow. No. 4. W. Lark Sparrow, W. Meadowlark. No. 5. Killdeer, Howell's Nighthawk, Desert Horned Lark, Lark Bunting, W. Mockingbird. No. 6. All observations. To these has been appended a more detailed description of the study area. **Census:** Care was taken to avoid counting second or third nesting efforts of pairs whose earlier attempts were unsuccessful. Residents: Cassin's Sparrow, 6P; W. Lark Sparrow, 5P, 1Y; W. Meadowlark, 2P, 1Y; Lark Bunting, 2P; Killdeer, 2P; Howell's Nighthawk, 1P; W. Mockingbird, 1P; Desert Horned Lark, 1P, 1Y. **Total:** 8 species; 20 pairs; 3 young; 15 nests. Regular Visitors: W. Mourning Dove, 1P; W. Mockingbird, 2P; W. Meadowlark, 2P; N. Cliff Swallow, 5. Total, 4 species, 7 pairs (?). Wanderers: Least Tern, 1; W. Solitary Sandpiper, 1; Turkey Vulture, 1; Ferruginous Rough-leg, 1. Total, 4 species, 4 individuals. **Densities:** Residents: 20 pairs equal 1.25 acres per pair. 43 individuals equal .58 acres per individual. Residents and Regular Visitors: 27 (?) pairs equal .92 acres per pair. 55 individuals equal .45 acres per individual. Estimated bird density per 100 acres equals 172 plus (figured on basis of residents).—PHILIP F. ALLEN, Regional Biologist, Soil Conservation Service.

(A summary is printed on page 350)

New Junior Educational Executive

Miss Patricia Hahn, assistant director of the Froebel League School in New York City, a normal school in New York City for kindergarten teachers, has undertaken responsibility for the planning and supervision of the Junior Audubon Club and Audubon Nature Camp promotion. Miss Hahn has spent five two-week enrollment periods at the Audubon Nature Camp in Maine during the three camp seasons to date. She will greatly appreciate the coöperation of Junior Club organizers in sending her news of club activities and needs, and program suggestions.—J. H. B.

1938 Audubon Christmas Cards

This year's Christmas Cards of the National Association reproduce the original Audubon Elephant Folio prints of the Carolina Turtle-dove, Plate No. 17, Vol. I, and the Pinnated Grouse or Prairie Chicken, Plate No. 186, Vol. II. These reproductions appear on the face of the four-page card. The Dove card is of vertical design and that of the Grouse horizontal. On the inside is printed the greeting "Wishing you a Merry Christmas and a Happy New Year."

These cards will be available through the Service Department of the Association at 1006 Fifth Avenue, New York City, by October 20, and will be priced at $1 for eight cards in a box, or $2.50 for 25 in a box, including envelopes to match. Extra cards, other than in multiples of the above boxed quantities will be priced at 15 cents each. Each box contains all Grouse or all Dove cards, and orders will not be accepted for mixture of such cards within a box of above-sized units. The reproductions are by the same engraver as the $5, 8 by 22-inch size reproductions, endorsed by the Association, which were so favorably received a year ago.

These Christmas Cards are being sold for the benefit of the Sanctuary Fund.—J. H. B.

THE SEASON

CXXIII. June 15 to August 15, 1938

Boston Region.—The summer of 1938 will go down in history as the wettest ever known in New England, excepting only 1875. A moderate heat-wave in late June was followed by three days of deluging rain. During July there were nearly 10 inches of rain near Boston, flooding all rivers and marshes to spring-thaw proportions. The first half of August was warm, oppressively muggy, with mosquitoes at plague proportions. At outer coastal points there was much less rain, but abnormally cool and foggy weather prevailed throughout July. New Englanders either 'drowned' or 'mildewed'!

These conditions have naturally had effects on the bird-life. Certain species whose extremely early arrival last spring resulted in an early breeding season, which was concluded prior to the wet weather, have started migrating southward at phenomenally early dates. Ospreys, for instance, were southbound near Boston by July 13, and Prof. Eliot reports marked land-bird migration in the Connecticut Valley by August 15. Marsh-birds, however, suffered severely, and many land-birds lost broods, nearly fledged, the end of June. On the outer Cape the Terns as a whole had a disastrous season. At Monomoy, Arctic and Least Terns had begun to lay by May 30. The majority of the pairs raised no young at all; a very few were feeding young unable to fly on August 15, probably representing a third laying.

The heavy rains also produced some unusual conditions inland. Flooded golf-grounds and low-lying fields formed innumerable minor shore-bird habitats at inland localities. Prof. Eliot reports unusual numbers of this group in the Housatonic and Connecticut River valleys extraordinarily early. In a flooded cornfield at West Newbury, on August 4, R. C. Curtis and I found no less than 12 species, including a Stilt Sandpiper. Garrison reports similar conditions on a smaller scale in the Sudbury Valley at Wayland, a Stilt Sandpiper reported there also. Needless to state, this species is a 'nine-days' wonder' in such places. At this season of the year our grassy marshes are ordinarily at their maximum degree of vegetal luxuriance with a minimum of water and consequently quite unsuitable for interesting birds. This year the grass is rotted down and brown, and the marshes are just beginning to teem with Ducks, Teal, Herons, and shore-birds.

Summer Notes.—Two adult Pomarine Jaegers at Monomoy Point, June 18 (Garrison and Griscom), probably represent late spring migrants. A Black Tern on the same day in full breeding plumage was collected and proved to have undeveloped reproductive organs, thus accounting for so late a straggler. Lesser Scaup, 1♂, Northampton, August 6 (Bagg and Eliot) remarkable inland record. A pair of Red-breasted Mergansers bred at Monomoy and raised one chick to maturity (Maclay). Hooded Merganser nested again at Pepperell (Richards). Arctic Tern, 15 pairs breeding on Milk Island, Cape Ann (Emilio and Curtis). Orchard Oriole, 2♂, 1♀, at Duxbury (Lawson); 1 young male at Brewster on outer Cape, July 3 (Garrison and Griscom). Henslow's Sparrow nesting at West Newbury (Eliot, *et al.*), first time in Essex County north of Boston in 18 years; also at Andover, N. H. (K. Elkins). There was the usual list of straggling sea-fowl and shore-birds at coastal points, but the following are most unusual: Glaucous Gull, 1 spent entire summer at Nauset (Hagar); Kumlien's Gull, 1 at Monomoy, July 3 (Garrison and Griscom); Dunlin (subsp.?), 1 at Plum Island, July 19 (Eliot) and August 10 (Griscom, Touseys); Razor-billed Auk, 1 all summer on Menemsha Pond, Martha's Vineyard (Eliot).

Notes on migration follow, arranged by groups.

Greater Shearwater, only 1 report as yet near the coast. Sooty Shearwater, a very

few off Chatham, July 24 to August 8, and Cory's Shearwater, 1 off Chatham, July 24, earliest record for New England (Griscom, *et al.*). Wilson's Petrel, locally common only this year, generally scarce and scattered. Leach's Petrel, 6 off Block Island, July 26 (A. M. Clark), 1 off Chatham, August 8 (Griscom, *et al.*), both most exceptional records.

Southern Herons: On the whole a very poor flight, as expected in so rainy a season. The Egret arrived earlier than ever before, a few in late June; none others on the coast until early August. Little Blue Heron, only 3 reports from entire State to date. Yellow-crowned Night Heron—only 2 birds on outer Cape (Bishop and Griscom), 1 on Plum Island (C. H. Richardson).

Shore-birds: Early and numerous. At Monomoy, Dowitcher, Least Sandpiper, Lesser Yellow-legs arrived July 3. Knot, Semipalmated Sandpiper, Greater Yellow-legs, Western Willet, Curlew and Ring-necked Plover were southbound July 10; on July 16, Stilt and Baird's Sandpiper; July 23, Pectoral and Western Sandpiper, Sanderling, Black-bellied Plover, Turnstone; July 24, Northern Phalarope, earliest state record; August 12, Red Phalarope. The peak of the early flight of adults was between July 23 and 30, as proved by careful counts of the Dowitcher: July 3, 55; 10th, 430; 16th, 800; 23d, 1100; 30th, 1100; August 6, 500; 13th, 150. I am particularly indebted to Mr. David L. Garrison for invaluable assistance at Monomoy.

Jaegers were reported in Buzzards Bay, July 15 (Peabody) and 1 off Rhode Island, July 13 (A. M. Clark). All 3 species were seen off Chatham, July 24 (Griscom, *et al.*), and a few regularly until August 8. Ring-billed and Herring Gulls arrived in numbers at Monomoy, July 30, and this date saw the peak of the Tern concentration at Monomoy Point, at least 20,000, of which 10 per cent were Roseate, with 4 Black Terns still in breeding plumage.—Ludlow Griscom, *Museum of Comparative Zoölogy, Cambridge, Mass.*

New York Region.—With the exception of the last two weeks in the period that is covered by the report, the daily record of weather was warm, humidity high, and a shower or storm each day. For almost two months a Bermuda 'high' was present to the south of us, drawing the warm west and southwest winds, moisture-laden, to our territory; it was an unusual day that was without rain in some form. The combination of warmth and excessive moisture was ideal for the growth of our flora, but, from the general tone of the bird reports, our nesting birds did not fare too well. The colonial beach-birds must have been affected by the constant downpours, especially the nestlings that were hatching at the time, and even at the present time there is an absence of the large flocks of Terns on our outer beach. Land-birds are described as never being too plentiful, and Mayer writes, noting the belated gathering of the Swallows, far below the numbers of a similar period last year. However, the last week in July and the succeeding weeks in August broke the wet spell, and with the changing winds, especially from the northwest, migration was speeded, and good flights were noted.

In the following records positive breeding data were not always ascertainable, for mere presence is insufficient evidence. Pied-billed Grebe was noted as breeding in three places near Easthampton, L. I., a very good number for this part of Long Island (Helmuth); Blue-winged Teal were noted at Jones Beach Pond, L. I., on June 17, 3 males being seen (Jacobson, Sedwitz), and these birds were noted throughout July, but no nesting evidence was looked for; 3 pairs of Blue-winged Teal nested near Millstone, Somerset County, N. J. (F. Allen); 3 nesting pairs of Sharp-shinned Hawks were found near East Millstone, N. J., on the boundary of a game preserve, to the unfortunate end of the peaceful Buteos that sailed over the section, for it was these big, conspicuous Hawks that were in the warden's gunsights when he avenged the depredations of the Sharp-shinned Hawks (F. Allen). Black Rail was flushed from the edge of the Jones Beach Pond, L. I., on July 23 (Norse, Cantor); another individual was flushed at Oak Island on July 29 (Vogt, Hickey, Mangels, *et al.*); Piping Plover at Smithtown, L. I., on June 16, is suggestive evidence of breeding; Wilson's Snipe, 3, at Hanover Neck, N. J., on July 17 (Urner Ornithological Club); Black Skimmer raised at least 2 young,

which were banded, Oak Island, L. I., July 9 (R. Nash, I. and W. Sedwitz); Barn Owl occasional in the white pine grove near Mecox Bay, L. I. (Helmuth); Prairie Horned Lark, July 3, Elizabeth, N. J. (Lang, *et al.*); 3 pairs of the same species nested at Idlewild, L. I., and the first Nassau County breeding record was discovered at Atlantic Beach, L. I., when 2 birds with young were found (Mayer); Kentucky Warbler, a pair at West Englewood cliffs, July 25, may have been breeding (Mayer).

The records in the following group are for the stragglers, the stay-overs or summer residents, and allow no reasonable explanation. Loon, at Oakwood Beach, S. I., July 16 (Norse, Cantor); 1 at Atlantic Beach, L. I., July 30 (Mayer); Double-crested Cormorant, July 9 and 10, 6 birds, Idlewild, L. I. (Mayer); Brant, 1, Oak Island, L. I., August 6 (Mayer); American Widgeon, a male in fine breeding plumage, Brookhaven, L. I., July 9 (McKeever, Sedwitz); Pintail, 3, July 23 (Norse, Cantor) and 1, August 6 (Mayer), all seen at Jones Beach Pond; Green-winged Teal, 1 immature male, present from June 26 to August 6, Jones Beach Pond, L. I. (Mayer); Greater Scaup was noted at Point Lookout, L. I., on July 30 (Mayer), and at Inwood up until July 30 (Norse, Cantor); perhaps the first summer record of the King Eider in our region was indicated by the presence of a male at Oyster Pond, Montauk, L. I., during the months of June, July, and August (Helmuth); Ruddy Duck was noted at Jones Beach Pond, on July 23 (Norse, Cantor); a female Hooded Merganser was seen at the same pond on August 13 (Norse, Cantor); the appearance of Knots at the early dates, in July, and their absence until August, make one wonder whether these birds were going north or south in July. Fifteen of these birds were noted at Moriches Inlet, L. I., on July 9 (McKeever, Sedwitz); there is a gap until July 24 when, at Idlewild, L. I., three birds were seen (Mayer), after which date the birds were regularly, though sparingly noted; White-rumped Sandpiper was seen at Idlewild, L. I., on July 16 (Mayer), but other observers did not seem to note the species and it was absent from Long Beach and Oak Island until the middle of August; a good flight of Pectoral Sandpipers was noted on July 29, 30 or more being seen at Jones Beach (Sedwitz); that Black-backed Gulls have become a summering bird in our region is apparent, 4 adult birds having been noted in July at Moriches Inlet (McKeever, Sedwitz); also seen migrating past Jones Beach in early August (Stephenson, Sedwitz).

Lind and Rorden turned in the first record in 51 years of the Audubon's Shearwater, a bird picked up dead at Point Lookout on July 24. The bird was brought to J. T. Nichols of the American Museum of Natural History for identification.

The Shearwaters were completely absent from the ocean front as far as the shore observers were concerned, and this absence may be attributed to the warm currents that have been close to shore this summer. The American Egret came north this summer in rather nice numbers, and was distributed in most parts of the region from the time it arrived to the present. The greatest numbers were seen at Jones Beach, where 30 or more birds were seen at one time on the sanctuary pond. Snowy Egrets came in August 13 at Jones Beach Pond (Norse, Cantor); Little Blue Herons came into our region in a general way at the end of July, though singles and pairs of birds were seen earlier; the maximum numbers noted were at Newark, N. J., on August 14, 20 birds; Yellow-crowned Night Heron, 2 birds, immature plumage, from August 5 to 13, Sagaponack, L. I. (Helmuth); Black Vulture, 1 carefully noted near the Easthampton airport on July 31 (W. T. Helmuth IV); Turkey Vulture, 1, Idlewild, L. I., June 21 (Mayer); Purple Gallinule, captured at the Southampton Tennis Club, L. I., July 27, where it was found walking on the lawn courts, and reported by Dr. Cobb; Long-billed Curlew, seen on the open beach at Georgica Pond, L. I., on August 11 (Helmuth); Little Gull, though it was unobserved in this region through the spring, was seen on July 29, in the Lower New York Bay, and described as a winter-plumaged bird (F. Allen); Summer Tanager, 1 seen late in July, at Clifton, N. J. (Mangels); Petrels (sp.?) reported by a fisherman, from Titicus Lake, Westchester County, July 28 (Breslau); Wilson's Petrel, 3, June 17, Jones Beach (Stephenson, Sedwitz); 2, July 30, Atlantic

Beach (Mayer); Shoveller, 2 in a flock of Black Ducks, at Sagaponack, August 11-13 (Helmuth); Osprey, migrating southwest, July 31, Oak Island, L. I. (Stephenson, Sedwitz); King Rail, 1, Van Cortlandt Park, August 9 (Norse); Golden Plover, one adult and one immature, July 9, Moriches Inlet, L. I. (McKeever, Sedwitz), an early or late date?; also one at Sagaponack, L. I., August 11 (Helmuth); Hudsonian Curlew, reported from June 27 (Mayer), in small numbers, to a maximum of 20 or more on July 9, Oak Island, L. I. (Sedwitz, McKeever); lesser numbers were noted into August. Upland Plover were noted at many points in good numbers, two records from Manhattan Island being of interest: the first from Riverside Drive at 72d Street, late in July (Matuszewski), a flock of more than 10 birds; the second, 3 birds flying southwest over the Hudson River and seen from 42d Street ferry house (Sedwitz); Willet, 1, July 9, Moriches Inlet, L. I. (McKeever, Sedwitz); 12, Napeague Beach, L. I., August 13 (Helmuth); Baird's Sandpiper, 5, August 9, Sagaponack, L. I. (Helmuth); Curlew Sandpiper in full breeding plumage, August 6, Oak Island, L. I. (Mayer); in all probability the same bird that was seen at Jones Beach Pond this spring and roughly a repetition of the dates of the bird's appearance last year, when it was noted in June at Oak Island and in August at Jones Beach. Stilt Sandpipers were seen on August 6 at Oak Island where 80 birds were noted (Mayer); 57 birds were reported at Easthampton on August 8 (Helmuth); Western Sandpiper, 100, August 6, Oak Island, L. I. (Mayer); 40 birds noted at Easthampton, August 8 (Helmuth); Sanderling, 1, July 9, the low point in this species' migration as noted at Moriches Inlet (McKeever, Sedwitz); Red Phalarope, 1, July 30, Point Lookout, L. I. (Mayer); Parasitic Jaeger, 1, June 17, Jones Beach (Jacobson, Sedwitz); also 1, August 6, Oak Island, L. I. (Mayer); Black Tern present since June on Jones Beach strip, from 2 to 20 birds seen in one day; Mockingbird, 1, August 4, Idlewild, L. I. (Mayer); Migrant Shrike, 1, August 15, Wainscott, L. I. (Helmuth); Golden-winged Warbler, 1, August 6, Inwood (Norse); 1, August 11, Sagaponack, L. I. (Helmuth).—WALTER SEDWITZ, *New York City*.

Philadelphia Region.—The period June 15 to August 15 was one of abnormal rainfall. July, particularly, was humid and wet. Daily downpours were usual throughout the month.

The Tern and Skimmer colonies along the New Jersey coast suffered greatly from the almost continuous rain. Many young were destroyed.

Shore-birds have occurred at numerous inland points. Rain pools in low fields have proved to be the attraction.

During June, under the direction of the late Charles A. Urner, a New Jersey statewide breeding-bird census was taken. In the 7 southern counties of the state, 11 coöperators reported 123 species as actual or probable breeders. Among these were: Pied-billed Grebe, American Egret, Snowy Egret, Yellow-crowned Night Heron, Blue-winged Teal, Pintail, Red-tailed Hawk, Red-shouldered Hawk, Willet, Roseate Tern, Barred Owl, Prairie Horned Lark, Blue-gray Gnatcatcher, Warbling Vireo, and Bobolink.

Other records of interest: July 17, Butler Place, N. J., Brown Creeper, 2, one of which was singing; July 31, Manahawkin, N. J., Red-tailed Hawk, 1; June 6, Moorestown, N. J., Red-tailed Hawk, captured alive [this bird had been banded one year ago (June 6, 1937) near Salem, N. J.] (Gillespie); July 26, Haddonfield, N. J., young Barn Owls calling out of nest (Regensburg); August 6, Fort Mott, N. J., Semipalmated Sandpiper, 15,000; August 14, Weymouth, N. J., Ruffed Grouse, 1 (Potter); June 25, Mount Pocono, Pa., Cliff Swallow, 200 occupied nests under the eaves of one building (Street); July 21, Hart Scout Reservation, Sumneytown, Pa., Pileated Woodpecker, 3 (Frost); June 18, Cobbs Creek, Philadelphia, Pa., Red-headed Woodpecker feeding young; June 2, Barn Owl, 1 half-grown young (Groskin); June 12, Tinicum, Pa., Scaup, 6, Golden-eye, 1 female (Q. Kramer); May 22, Cape May, N. J., Purple Sandpiper (Mann); May 14, Tinicum, Pa., Pintail, 6 (J. Rigby); June 20, Wissahickon Valley, Philadelphia, Mourning Warbler (Clark).—JULIAN K. POTTER, *Collingswood, N. J.*

Washington (D. C.) Region.—The Washington region during June, 1938, ex-

perienced mostly moderate weather with much rain. During July, however, the weather was hot and humid, also with many rains.

Notwithstanding the rather cool spring, most of the migratory movements of birds had been completed by the beginning of June. A few Black-poll Warblers remained, but relatively few other birds, except, of course, the regular summer residents.

The Eastern Mockingbird still continues fairly common in the city of Washington, where it was observed a number of times during June. The Black-crowned Night Herons that have been nesting in the National Zoölogical Park, in the northern part of the city of Washington, continued their residence there, and were seen a number of times in the neighboring part of the city flying to and fro near their breeding place. On June 9, the Scarlet Tanager was heard singing in a portion of the city adjoining the National Zoölogical Park, and possibly was breeding in that neighborhood, as it has done in previous years.

Two Short-billed Marsh Wrens were reported by J. C. Jones in the marsh along the Patuxent River near the Marlboro Bridge, in Maryland, on June 18. From their behavior it was probable that these birds were breeding in that vicinity. A Raven was reported one mile from Rockville on July 4 by W. H. Lawrence. This bird was watched for considerable time and its identification verified.

A nest of the Oven-bird found by W. H. Lawrence on June 27 in Rock Creek Park in the city of Washington contained 3 young which left the nest on the following day. Still another nest in the same locality contained 3 eggs on June 28, only 2 eggs on the following day, and on the 30th one of these hatched. On the same day, a nest of the Red-eyed Towhee containing 3 eggs was found by the same observer at Cabin John, Md., and also a nest of the Eastern Kingbird containing 2 young. On July 4, a nest of the Eastern Meadowlark containing 4 eggs was seen by Mr. Lawrence near Rockville, and on July 5, still another nest of this bird with 2 eggs.

The eggs in a Cooper's Hawk's nest, found near Washington by Mr. Lawrence, were hatched on June 16; and 3 young of the Louisiana Water-Thrush in Rock Creek Park were known to have flown from their nest on the same day.

A Killdeer's nest containing 4 eggs was discovered on June 11 at Laytonsville, Md., by Mr. Lawrence, and on May 29, 4 young Killdeers recently hatched were reported by him in the same locality. On June 18, the same observer saw a nest of the Rough-winged Swallow containing 6 young along the Chesapeake & Ohio Canal near Sycamore Island, Md. On the same day he observed in the same locality a nest of the Red-eyed Vireo containing eggs, and an American Redstart feeding young. On June 5, J. C. Jones found a nest of the Crested Flycatcher near Port Tobacco, Md.

An interesting Song Sparrow's nest was reported by W. B. McIlwaine, Jr. The nest was built in a rose bush on a trellis on the porch of a house in Alexandria, Va., about 11 feet above the ground. This nest, which was observed by Dr. McIlwaine on June 1 then contained at least 2 eggs, on which the bird was sitting. This was apparently the second brood for this pair of birds, since another brood was previously reared in the same nest this season.—HARRY C. OBERHOLSER, *Biological Survey, Washington, D. C.*

Pensacola (Florida) Region.—Normal temperatures prevailed throughout the period. Precipitation was well distributed and normal in quantity, except for a series of torrential rains during the second half of July. No winds of destructive force were experienced.

The immediate effect of the July rains, filling the upland ponds and raising the river levels, was to bring in an unusual variety of Herons. American and Snowy Egrets and Louisiana Herons, all rare in this region, appeared in some numbers and almost every roadside pond harbored a small group of one or more species. An occasional White Ibis (very rare here) added variety. Little Blue Herons have been less common than usual because of the wanton destruction in May of one of their old-established nesting colonies.

The mid-July shore-bird migration, when most of the common species appear in some numbers within a week around July 18, was prolonged to almost a month this year.

Solitary Sandpiper on July 10, and Piping Plover on July 14, were the earliest ever recorded. Upland Plover on July 16, and Western Sandpiper on July 17, equaled their previous earliest arrivals. Least Sandpipers on July 14, and Dowitchers on July 17, were early, though not quite the earliest ever known. Pectoral and Semipalmated Sandpipers and Lesser Yellow-legs were about normal in their arrival on July 20; while Semipalmated Plover on July 28, Spotted Sandpiper on July 31, and Sanderling (in full nuptial plumage) on August 7, were late. Sanderlings and Black-bellied Plovers in gray plumage were present in small numbers throughout June and July.

Arrivals of upland species also furnished some surprises. Bank Swallow (rare) on August 7, and Marsh Hawk on August 14, were far in advance of their previous earliest dates. Other arrivals were Black and White Warbler, July 24; and Barn Swallow, Prairie Warbler (rare), and Redstart on August 7. Immature Yellow-crowned Night Herons, post-season wanderers rather than true migrants, appeared in the salt marshes on July 3.

A White-breasted Nuthatch, first seen on June 25, at Mrs. A. L. Whigham's station at Century, Fla., reappeared daily until early in August. The extreme rarity of this species is difficult to account for, the present occurrence being only the third that has come to my attention in 22 years. Equally inexplicable was the appearance on July 10 of an adult male Bobolink in full nuptial plumage. Bobolinks are rare, at best, and had never before been seen between May and October. A Barn Owl, found dead on July 10, was only the second I have known here in summer. On July 27, a Pied-billed Grebe, in full nuptial plumage, appeared in a rain pond that had been dry up to a few days before. This species is not known to breed in this immediate region, and it seldom appears as a migrant until the latter part of September. Cabot's Terns, sometimes common for a short time in spring, have been present in considerable numbers throughout the present period. Two Ring-billed Gulls in immature plumage have been seen on many occasions in company with Laughing Gulls and Royal Terns.

The first nest of the Black Skimmer was found on June 19. On the same day, and in the same colony, Least Terns had young several days old. Gray Kingbirds had their young on the wing on June 26. Some late breeding data include: Downy Woodpecker was seen feeding young in the nest on June 19; a pair of Killdeer (a rare breeder here) had small downy young on July 10; Orchard Orioles were seen with young just out of the nest on July 10; a pair of Red-bellied Woodpeckers was seen feeding young in the nest on July 31; and a Least Tern was still bringing food to a young bird capable of short flights on August 14.—Francis M. Weston, *2006 East Jordan St., Pensacola, Fla.*

Put-in-Bay (Ohio) Region.—The summer period has been marked by nearly average temperatures and somewhat more than average precipitation. The bird records that have come to hand show no noticeable departures from the normal. By the last of June the Grackles, Starlings, and Red-wings were flocking and by early July Tree Swallows and Rough-winged Swallows were also gathering nightly at roosting-sites. Among the nesting records of especial interest are Cliff Swallows, Wood Duck, and Sora in Licking County (Claugus); Canada Warblers and Hooded Warblers near Toledo (Campbell). Thomas reports the Short-billed Marsh Wren nesting near Harmony in Clark County; Maslowski and Goodpaster note the presence of a small colony of Least Bitterns in Clermont County and also an unusually late nesting of Red-wings in the same locality, 4 nests with eggs having been found July 31. On Lake Erie Ring-billed Gulls and Caspian Terns were present both at Toledo (Campbell) and at Put-in-Bay throughout the summer. Campbell also reports that Bonaparte's Gull was seen several times in July near Toledo. Another unusual summer bird was the Double-crested Cormorant (5 individuals) seen in the vicinity of the Bass Island group near the international boundary.

The two largest colonies of the Common Tern in Ohio both seem to have had disastrous seasons due to the severe wind-storm and rains of June 25–26. Campbell writes that in a colony of approximately 700 adults at Little Cedar Point there were about 50 young birds and many nests with eggs on

June 25. During the storm, water swept over the bar, completely destroying young and eggs. Subsequent attempts at renesting were a failure. At Starve Island near Put-in-Bay a still larger colony had a similar history. Following the storm, more than 500 new nests were found when the island was visited on July 8. Many of these nests seem to have been deserted later and it is doubtful if as many as 50 young were reared. Reports from Thomas in central Ohio, Blincoe at Dayton, and Campbell at Toledo, all confirm the writer's impressions that the Dickcissel has been unusually scarce this summer. The flight of southern Herons has been distinctly below that of previous years. American Egrets have been rather generally present in the state but not in large numbers. There are few reports from the northeast section of the state. The first record, July 10, comes from Toledo (Campbell). Additional localities are Dayton (Blincoe), Guilford (Baker), South Charleston (Thomas), Portsmouth and Columbus (Chapman), Licking County (Claugus), Pymatuning (McLaughlin), Sandusky Bay (Gebbart), Put-in-Bay (Walker). Little Blue Herons have been less common than the Egrets but have been reported from Pike County (Maslowski), Portsmouth, Toledo, Sandusky Bay, Put-in-Bay and Guilford. Notable shore-bird records are conspicuously few; high lake levels may possibly be the explanation. At Pymatuning Lake (McLaughlin) 3 Dowitchers were seen on July 10, a Stilt Sandpiper on the 16th, and 4 White-rumped Sandpipers on the 23d. Both at Toledo and Put-in-Bay, Ruddy Turnstones have been present in small numbers since July 2. Migrating Upland Plovers were noted at Dayton (Blincoe) on July 8, at Toledo (Campbell) on July 17. At Put-in-Bay there was a migration of Yellow Warblers on July 17, and the same day Campbell reports an apparent migration of Field Sparrows at Little Cedar Point. The Northern Water-Thrush and Magnolia Warblers appeared at Put-in-Bay August 13, and the Canada Warbler (Maslowski and Goodpaster) at Cincinnati on August 14.—CHARLES F. WALKER, *Stone Laboratory, Put-in-Bay, Ohio.*

Chicago Region.—For a more sound and practical presentation of weather data, the present writers will henceforth review such data for two-month periods rather than the eight-week periods spread over one month and halves of the preceding and following months; in other words, in the present report June–July will be considered rather than June 15–August 15, and the next report will include weather data for August–September.

The temperature for June and July fluctuated slightly and unappreciably about normal. Precipitation was twice normal in June, slightly over normal in July.

There is an unfortunate dearth of material for the present report—surely not from a deficiency in field work—and the records at hand are of a decided miscellaneous nature, few and scattered. Some of the notable ones follow: Green-winged Teal, August 8, adult with 6 young, flushed at a small slough west of Palos Park (Nork); Prairie Chicken and Wilson's Phalarope, June 17, 10 miles south of the Kankakee River in Newton County, Ind. (Black); Black-bellied Plover (non-breeding), June 26, Waukegan (Nork); flock of 15 Willets, August 20, Lincoln Park (Dreuth); Western Sandpiper, August 13, Waukegan (Palmquist), also one banded August 14, Chicago Ridge (Mrs. Baldwin and Bartel); Orchard Oriole, June 23, Willow Springs (Nork).

O. C. Durham reports as follows on the Common Tern colony at Waukegan: On May 28 there were five nests, three of which contained three eggs each, the other two with one egg each; on June 23 there were at least three nests, two with three eggs each, one with two eggs, and on that date there were also two young Terns, two to three days old; on July 16 there were no nests or young.

American Egrets are reported in flocks of about 30 from several scattered locations, not to mention other reports of one or two individuals. Such numbers exceed any on record to August 15 in previous years. The present year is notable also in that this species, after perhaps several decades, is again breeding along the Illinois River—at Depue (Bartel) and at Liverpool (Bellrose). Interest in the American Egret and its spread northward is enhanced by reports of an unprecedented number from the Minneapolis region (Breckenridge) and also a single Egret from the tip of lower Michi-

gan (Cheboygan County) on August 8 (Pitelka).—RUDYERD BOULTON and FRANK A. PITELKA, *Field Museum, Chicago, Ill.*

Minnesota Region.—The summer on the whole has been a comparatively cool one. The temperature at Minneapolis has reached 90° only ten times and then for only a day or two, with usually cool nights. July was the coolest July for ten years, with an average mean temperature of about 73°. Much rain has fallen, reaching locally heavy downpours, causing swollen streams and considerable damage. The lakes and sloughs are well filled again. There have been no periods of drought as in recent years.

The outstanding avian event of the summer has been a great influx of American Egrets into southern Minnesota. On August 11, Miss Jilson reported seeing 7 at Frontenac, on Lake Pepin, and Phil Nordeen, State Warden, saw several at the same place. Mr. Nordeen also reported seeing a number on Prairie Island, near Hastings, where Roger Tollefson, of Castle Rock, had seen several on August 7. On the 15th, Alfred Van S. Pulling, Associate Biologist of the Upper Mississippi River Wild-life and Fish Refuge, wrote as follows: "There are a couple of hundred American Egrets in the Winneshiek country near Lansing, Iowa; some dozens are being seen around La Crosse, Wisconsin; about 40 were around over Trempealeau Refuge yesterday; we saw 11 over the channel near Weaver, Minnesota, last week; and they have been seen recently as far north as Wabasha, Minnesota." Dr. Charles F. Olson and A. F. Hernlem also reported from Hastings and Red Wing. The writer, in company with Mr. Breckenridge and Warden Nordeen, saw 8 on Prairie Island August 18 and 2 in the Minnesota River bottom near Chaska on August 20. On August 20, Messrs. Berthel and Nord visited Prairie Island and saw some 16; 10 in one flock. Other messages by telephone (for these beautiful white birds are a 'nine-days' wonder' to those who see them for the first time) show that they have spread westward almost entirely across the southern part of the state. On August 28, George Meloney reported seeing as many as 50 to 60 feeding along the marshy shore at the northern end of Heron Lake.

But the most surprising report of all comes from Dr. G. H. Luedtke of Fairmont, Martin County, Minn. On August 20, an acquaintance came to his office and reported as follows: During the latter part of May this year about 25 large white birds came to a swamp near East Chain Lake, about 10 miles southeast of Fairmont, near the Iowa line. Black-crowned Night Herons had established a heronry there three years ago. A few Great Blues also came to stay. The white birds had long bushy tails (the plumes, of course). All the long feathers disappeared after the nesting season, leaving only a stubby tail. The nests of these white birds were built low down in small willows, standing in water hip-deep, the result of high water, the place having been dry during the recent drought years. The nests were loosely constructed and they and the eggs were somewhat larger than those of the Night Herons. A visit in June disclosed many young in the nests. On August 21, Dr. Luedtke visited the place and saw 10 Egrets in the vicinity. That American Egrets should come this far north to establish a nesting colony is almost unbelievable but the account seems entirely credible. It is to be hoped that they will come again next year when we can investigate more fully.

Reliable reports indicate that there has been a very considerable increase in the number of nesting Ducks this year. Improved water conditions have no doubt played a large part in this. Northwestern Minnesota was once a paradise for nesting water-fowl. Unwise drainage destroyed the ideal conditions. For several years past both Federal and State agencies have been endeavoring to reëstablish as near as may be the original situation. It is instructive and heartening to know that these efforts are bringing satisfactory results. The following letter, kindly contributed by Dr. Gustav Swanson, Assistant Professor of Economic Zoölogy in the University of Minnesota, tells the story: "We visited Thief Lake and Mud Lake on two dates, July 24 and August 9, 1938, and both times were greatly impressed by the evident success of these two reclamation projects. Mud Lake, the Biological Survey refuge, is the more successful of the two. There we saw literally thousands of Ducks and Coots. The Ducks were

chiefly Mallards and Blue-winged Teal but there was a scattering of Pintails, Shovellers, Gadwalls and, most interesting of all, we saw on the first trip two broods of Baldpates. The men on the refuge said there were a number of Baldpates nesting on other parts of the lake. Both lakes have now reached a very satisfactory water-level and both appear to be 'restored' in so far as the production of water-fowl is concerned."

During a visit to Lake of the Woods this summer Dr. Swanson found evidence that a few pairs of White Pelicans were attempting to nest on a rocky island in the northern part of the lake, close to the Minnesota line, but the fishermen in their Cormorant-extermination efforts will probably make it difficult for them to succeed.

Miss Lakela, of Duluth, reports that the flocks of returning shore-birds began appearing on Minnesota Point (which is under her daily inspection) July 10 and 11. A few Caspian Terns remained throughout the summer, and also certain of the shore-birds that should have gone north.

The State Game and Fish Department has been making strenuous efforts to save thousands of Ducks that are sick and dying of botulism at Lake Shookatan, in Lincoln County, close to the Dakota line. Hundreds of sick birds have been transferred to other lakes and a small army of men is employed in scaring approaching Ducks away from the infected lake.—Thos. S. Roberts, *Director, Museum of Natural History, University of Minnesota, Minneapolis, Minn.*

St. Louis Region.—The month of July was normal, with average rains, and, with the exception of a few days when the thermometer registered around 100°, was not uncomfortably hot. Early August was about the same, a few very hot days, average rain prevailing until about the 15th, the rest of the month dry.

From Lebanon, Mo., comes a report of George E. Moore stating that an otherwise ideal nesting season had been marred by a shortage of fruits, caused by a late damaging frost in early spring. As a result, Mockingbirds, Catbirds, and Thrashers caused much damage, especially to the raspberry crops. Swallows were few, with most of the summer residents showing a decrease in numbers. Martins were noticeably scarce and up to late July could be counted by the dozens rather than by the usual hundreds. Starlings and Grackles, however, increased in numbers and the Bob-whites were doing well. Hawks seem to have almost disappeared and the usually common Screech Owl seems to be unaccountably scarce this year. He also reports a Chimney Swift's nest containing two young birds, that broke loose from its moorings and fell into the fireplace. The nest, with young, was replaced in the chimney, the damper closed under it to keep it there and a week later the birds were doing well. A few days later they were gone. A visit to the Great Blue heronry on the Gasconade near Waynesville showed the group doing well; 14 nests were occupied and the larger birds were out of the nest.

In contrast to the shortage of Martins at Lebanon, P. J. Smith, on July 23, writes that they have had more Purple Martins there this year than ever before. William Jenner, of Fayette, also notes the damage done to the raspberry crops this year, notably by Catbirds, House Wrens, Grackles, Robins, and Orioles. In his letter he says that a House Wren in attempting to nest in a bathing-suit hung up in the yard added sticks, nails and wire to the usual building material supplies.

Not mentioned previously was the unusual find of a Purple Sandpiper in a pool at Orchard Farm near the St. Charles marsh region, on May 4, carefully observed by Miss L. R. Ernst and Miss Elliott of St. Louis with 8- and 12-power glasses. This bird is listed as a casual in Bennitt's checklist of Missouri birds and the last previous records were in 1854. There is no question about the correct identification. Another unusual find in St. Charles County was the Arkansas Kingbird reported by Wayne Short, May 26. This is also listed as a casual, the only other records being in counties north of Kansas City. Still another record was the sight of the Yellow-crowned Night Heron at Horse Shoe Lake, 12 miles from St. Louis on the Illinois side, on May 24 and again on June 1, by Wayne Short and Miss Ernst. A year ago two Yellow-crowned Night Herons were seen circling over the Temps Clair Heron colony in St. Charles County on several occasions. Unfortunately,

two boys got into the colony, unobserved, early in June and did some shooting there before they were removed. The result was that most of the Herons there were apparently frightened away, for instead of the 300 to 400 nests occupied by Black-crowned Night Herons, Little Blues and the Green Herons found there a year ago, members of the St. Louis Bird Club and Nature-Study Society of Webster Groves found far less than 100 nests had tenants on June 18. On August 8, Oscar Root sighted the Semipalmated Plover at Boschertown, an early record.

Only three nesting reports of the European Tree Sparrow, local to St. Louis and near-by environs only, have been reported this year; one, as usual for three years, in the yard of J. E. Comfort, North Webster Groves; one in south Webster where these birds have been nesting every year, and one at St. Charles. Normally there is quite a colony in Tower Grove Park, St. Louis, but none has been noted as nesting there this year. Whether this useful and trim cousin of the English Sparrow, that thrived in St. Louis since its first introduction in the United States about 1870, only to be driven out to the suburbs later, is disappearing from its former known sections, or not, we do not know, but we find it in large numbers in the region surrounding Horse Shoe Lake, Ill., 12 miles out from St. Louis.

From two widely separate sources have come distress calls about red-brown wasps nesting in bird-boxes and keeping birds from using them, one at Pine Lawn, north of St. Louis, and the other on the 20-acre place of R. L. Hill, 25 miles south of here. Mr. Hill is a well-known birdman, but he says he took his boxes down because of the insects. The descriptions in both cases are similar and the color and habits of the wasps suggest them to be *Polistes rubiginosus*. Observed near the banding station of L. M. Weber at Sherman on the Meramec River by Weber, R. L. Hill, and other members of the Webster Groves Nature-Study Society, were Piping Plovers, American Egrets, Pectoral, Least, Solitary, Semipalmated, and Baird's Sandpipers on August 21, and, at Rankin, an early Blackburnian Warbler, on August 21.

Encouraging reports of the presence of Bob-whites in numbers come in from many sources, and a 10-mile drive over little-used side roads in St. Louis County on August 28, by S. P. Jones, flushed young Bob-whites along the roadways at four different places. Mourning Doves also were plentiful, and too tame altogether for their safety at this time of the year.—Sterling P. Jones, *Webster Groves, Mo.*

Rio Grande Delta Region.—Heavy showers on June 20, 21, and 22 brought the total rainfall for that month almost up to the average, but the poor distribution minimized the good that was done. The U. S. Weather Bureau at Brownsville reported 0.04 inches total rainfall for July and 0.05 inches to date for August. It would seem from these records that something like an all-time record for drought is about to be established in this region. There was a flood of considerable size on the river about the first of August that was caused by heavy rains on watersheds of distant tributaries. This flood filled the dry 'ox-bow' lakes along the river from Mission to the gulf, and flooded several miles of prairie between the river and the Boca Chica highway. Prairie ponds in that area which have been dry for months now contain sufficient water to carry through to winter.

The fact that the writer was absent the last five weeks of the period cut down the list of Cameron County migrants to the vanishing point. The only one obtained was the Black and White Warbler on July 3.

Mr. Hale's list of migrants observed near Mission is as follows: July 13, Western Sandpiper, White Ibis; July 19, Solitary Sandpiper; July 22, Least Bittern; July 27, Sora, Yellow-legs; July 28, Red-tailed Hawk, Alder Flycatcher, Wood Pewee; August 2, Dickcissel; August 3, Bell's Vireo, Black and White Warbler; August 7, Belted Kingfisher, Blue-gray Gnatcatcher; August 14, Barn Swallow, Cliff Swallow, Ruby-throated Hummingbird, Yellow Warbler.

The Mexican Crested Flycatcher seems to have been the first local bird to depart. All in the Mission area had disappeared before the first of August.

Mr. Hale listed 15 adults and 10 young Black-bellied Tree-ducks on July 13. It would seem that this species is now doing better in Hidalgo than in Cameron County.

Most species of breeding birds seem to have had a better than average year. The young of one species in particular, the Summer Tanager, is much more numerous in Cameron County than was the case a year ago. This was possibly due in part to early nesting which avoided much Cowbird activity, but may have been due to the remarkable decrease in the number of Great-tailed Grackles in the region this year. Mrs. Denzer of Alamo first called the writer's attention to the very noticeable 'scarcity' of Grackles during the spring. A belated investigation was attempted, and it was found that although numerous eggs and unfeathered young were eaten by the Grackles (almost completely feathered young of small species such as Sharpe's Seedeater were taken from nests) this year, in some exposed areas where almost 100 per cent of the eggs of some species were destroyed in the spring of 1937, a fair hatch of young of the same species was obtained in 1938. Since the Grackles were extremely numerous in the first part of 1937, there seems to be no way to account for the sudden drop in their numbers. This drop seems to have occurred in the fall of 1937. In this connection it is interesting to review the figures obtained in the Christmas Census from Harlingen published in BIRD-LORE in January, 1937, and January, 1938. Although more enumerators were in the field for the last census, only 6146 Grackles were listed, whereas 12,590 were counted the previous year in the same area. Since field observers were not conscious of a decrease until spring, it is quite possible that the low point had not been reached at the time of the last census. The Red-wing probably was similarly affected. However, this summer's nesting of both species seems to have been successful.

Both Snowy and Wilson's Plover were observed tending young at a small salt-water pond several miles northwest of Brownsville, and possibly 25 miles inland from the gulf, on July 3. At least 3 Least Terns were incubating eggs on the mud bank at the same location.—L. IRBY DAVIS, *Harlingen, Texas.*

San Francisco Region.—Bird happenings in midsummer in mid-California consist mainly of late or otherwise significant nestings, the beginning of southward migration, and occurrence of stray individuals outside their usual ranges. Observations available for this season have been separated into these three classes.

Laidlaw Williams noted a pair of White-tailed Kites almost continually after May 23 at one locality in Monterey County, and he saw them accompanied by two fledged, begging young on August 8. He reports Avocets also nesting in that county: two nests with eggs on May 5; five pairs, one nest and eggs, and downy young at the same place on June 17. Mrs. Allen on July 13 saw two Avocets with five tiny young near Dumbarton Bridge.

Because of the lateness of the start of nesting this year, it has been of special interest to see the usual abrupt terminations of this activity in late July and early August. The working out of the precise seasonal change which accompanies or results in this termination would be just as desirable as, and possibly more difficult than the study of their effect in early stages of nesting.

The scattered examples given here in general show late nestings for the species concerned. Screech Owl, July 1, a young bird on ground beneath a nest in Berkeley (A.). Western Flycatcher, nest at Carmel with three eggs on July 27, still held young on August 11 (W.); August 14, young in nest one-half to three-fourths grown, at Lake Lagunitas, Marin County (Sibley). Cliff Swallow, August 12, only one pair of a nesting colony left at Santa Cruz (A.). House Wren, June 16, a family [first brood] left a nesting box in Berkeley (A.). Russet-backed Thrush, June 28, young left a nest in Berkeley within a week before this date (A.). Cassin's Vireo, August 13, a family at Boulder Creek, song, ordinary calls, and calls of young heard (A.). Pileolated Warbler, August 6, a family of young out of the nest at Boulder Creek (A.). Pine Siskin, July 19, one feeding four young in Oakland (D. S. Brock); August 10, young being fed out of the nest at Carmel (W.). Lawrence's Goldfinch, last of three young, hatched from set of five eggs completed on June 9, left on July 9 (W.). Spotted Towhee, July 18, young just out of nest being fed in Berkeley (A.). Song Sparrow, July 15, feeding young Cowbird out of nest at Carmel (W.).

After July 1, trips to the shore provided records of new arrivals almost daily. These have been reported with much care by the Parmenters and others, as follows: Semipalmated Plover, July 30, 13 at San Mateo Bridge (P.); Black-bellied Plover, July 30, 50 at San Mateo Bridge (P.); Surf-bird, July 26, 1 at Cliff House Rocks (P.), August 5, 1 on Monterey Peninsula (W.); Ruddy Turnstone, July 27, at Cliff House Rocks (P.); Black Turnstone, July 20, at Carmel (W.), and July 27, at Cliff House Rocks (P.); Hudsonian Curlew, July 13, 100± at Mountain View Marsh (A.); Wandering Tattler, July 22, Cliff House Rocks (P.), July 23, 1 at Carmel (W.); Greater Yellow-legs, July 30, 10 at Alvarado (P.); Red-backed Sandpiper, August 3, 300± at Tomales Bay (P.); Spotted Sandpiper, July 28, Moss Landing, Monterey County (W.); Western Sandpiper, July 1, 12 at mouth of Carmel River (W.), July 7, 100± at San Mateo Bridge (P.); Sanderling, July 25, 20 on San Francisco beach (P.); Northern Phalarope, July 13, many at Dumbarton Bridge (A.), July 26, 8 at Monterey (W.), and July 30, 1000± at San Mateo Bridge and 5000± at Dumbarton Bridge (P.); Bonaparte's Gull, July 7, 6 at Alvarado (P.); Heermann's Gull, June 24, at Monterey (W.), fairly common after late June at Cliff House Rocks (P.)..

Many other occurrences are worth citing for various reasons, but mainly to show that we know too little about the birds of this area in summer. Parasitic Jaeger, August 7, two pursuing Gulls over the tide-flats at Moss Landing (W.); Band-tailed Pigeon, August 3, 24 at Bolinas Bay (W.); Crow, July 1, at Presidio of San Francisco (P.); Pygmy Nuthatch, August 6, a group of 5 came into a garden at Boulder Creek, the first ever seen there (A.); Winter Wren, August 12, 1 in Presidio at San Francisco (A. S. Hyde); Hutton's Vireo, June 23, a family seen and heard by Mrs. Allen in her garden in Berkeley, the first detected by her since the heavy rains in March, and August 15, heard at Boulder Creek for first time this summer (A.); Cowbird, June 19, 16 near Stockton (B.); Arizona Hooded Oriole, July 8 and 10, one on Seminary Court, Oakland (B.); Blue Grosbeak, June 19, 10 pairs and 3 nests found near Stockton (B.).—JEAN M. LINSDALE, *Museum of Vertebrate Zoölogy, University of California, Berkeley, Calif.*

New Series of Field-Cards Ready

The Service Department of the National Association of Audubon Societies announces a new series of field-cards for the use of bird-students in checking their daily finds. There have been many cards issued by various local groups to cover their regions. These vary greatly in compactness and usefulness. The Audubon series of field-cards will measure approximately 6 inches long and 3½ inches wide, somewhat smaller than the average bird-card. They will appear in two styles—one on light stock, punched with holes on one margin to fit a standard size ring binder, the other on card stock, folding flush, without punching for the ring binder.

Three editions are now ready: one for eastern North America, east of the Mississippi River; a second for the central United States, roughly the area from the Mississippi River through the Great Plains to the Rocky Mountains. This includes the lower Rio Grande Valley, but does not include certain typically western birds which occur in some of the outlying mountains within the western edge of the Great Plains. A third field-card covers the three Pacific States. A fourth card covering the Mountain States is already prepared and will be issued if there is a sufficient demand.

These lists are complete except for certain of the more extreme rarities. There is a space at the end of each check-list where such accidentals can be added. Subspecies are omitted, with the exception of a few races that occur together in the same areas and are easily recognizable by the field student. We have, of course, been arbitrary about these inclusions.

The omission of subspecific names might confuse certain observers, at first; for example, the Lomita Wren of the Lower Rio Grande is simply a subspecies of the Carolina Wren and would be checked as the latter. Listing all of the races would have resulted in an unwieldy and impractical field-card. If, on the other hand, only one race of a species occurs in the area covered by a card, its local name is given.

National Association of Audubon Societies, Inc.

Balance Sheet as at June 30, 1938

ASSETS

Cash on Hand and in Bank		$16,279.72
Accounts Receivable:		
From Sales of Books, Publications, Supplies and Advertising	$886.07	
From Field Agents	98.92	
Other	2,981.80	
		3,966.79
Accrued Interest on Bonds Purchased		6.81
Investments (at cost or market value at date donated):		
Real Estate Mortgages	$723,361.84	
Bonds (market value at June 30, 1938, per confirmation received, $219,080.00)	267,171.58	
Stocks (market value at June 30, 1938, per confirmation received, $417,512.00)	441,492.76	
		1,432,026.18
Real Estate (cost of acquisition by deed or foreclosure proceedings)		154,054.11
Audubon Building (cost to June 30, 1938)		86,370.09
Sundry Assets:		
Camp Buildings	$15,732.78	
Camp Equipment	7,828.99	
Office Furniture and Equipment (appraised value depreciated)	7,202.82	
Motion Picture and Photographic Equipment (depreciated)	785.62	
Films and Prints (depreciated)	3,612.17	
Camp Library	256.68	
Book Library (estimated value)	8,500.00	
Boats, Engines and Automobiles (depreciated)	2,969.62	
Staff Lecture Slides	2,262.00	
Bronze Group Roosevelt Sanctuary (nominal value)	1.00	
Sanctuary Real Estate (nominal value)	1.00	
Colored Process Plates and Paintings (nominal value)	1.00	
		49,153.68
Inventories:		
Audubon Bird Cards	$3,973.86	
Slides	1,087.10	
Leaflets for Junior Members	3,741.23	
Leaflets—Service Department	148.45	
Buttons for Junior Members	647.95	
Books—*Hawks of North America*	1,976.00	
Books	5,005.38	
Field Glasses	415.78	
Bird Houses, Feeders, Baths and Food	70.47	
Circulars	2,246.26	
Bird Charts	111.89	
Christmas Cards	4.87	
Audubon Prints	65.25	
		19,494.49
Forward		$1,761,351.87

Brought Forward		$1,761,351.87
Deferred Expenses:		
Camp Expense (net)	$940.27	
Paper for BIRD-LORE	2,330.08	
Prepaid Insurance	2,104.67	
Research Fellowship	750.00	
Postage Meter Rental and Postage	286.78	
BIRD-LORE Expense, July–August issue	367.50	
Prepaid Salaries (Vacations)	583.74	
1939 Junior Leaflets, cost	50.20	
Rainey Real Estate Taxes	975.98	
Advance Expenses—Field Representatives and Wardens	100.69	
		8,489.91
		$1,769,841.78

LIABILITIES AND FUND BALANCES

Liabilities:		
Employees *re* Pension Fund and Group Insurance	$174.71	
Accounts Payable	6,234.85	
		$6,409.56
Mortgage Payable:		
Audubon Building, 1006 Fifth Avenue		70,000.00
Endowment Funds:		
General Endowment Fund	$1,023,857.91	
Permanent Fund of 1922	201,792.91	
Paul J. Rainey Endowment Fund	202,019.98	
Roosevelt Sanctuary Endowment Fund	1,196.42	
Cornelius Ayer Wood Fund	5,902.38	
Mary Dutcher Memorial Fund	7,665.04	
Laura Norcross Marrs Fund	25,119.15	
William Louis Abbott Endowment Fund	462.61	
Wilhelm L. F. Martens—		
Endowment Fund No. 1	24,015.96	
Endowment Fund No. 2	23,556.30	
		1,515,588.66
Special Funds:		
International Bird Protection Fund	$5,563.60	
Building Fund	151,350.54	
Paul J. Rainey Fund	7,893.10	
		164,807.24
General Fund Surplus:		
Balance, June 30, 1937	$21,206.43	
Add Credits:		
Adjustment Old Slides not previously inventoried	$424.55	
General Operating Fund	12,091.38	
Children's Educational Fund	673.01	
	13,188.94	
Forward	$34,395.37	$1,756,805.46

Brought Forward		$34,395.37	$1,756,805.46
Deduct Debits:			
Sanctuary Fund	$12,373.67		
Roosevelt Sanctuary Fund	2,950.49		
Persecuted Species Fund	5,059.63		
Additional Insurance for prior years	87.29		
Depreciation—Furniture and Fixtures	887.97		
		21,359.05	
Balance, June 30, 1938			13,036.32
			$1,769,841.78

Combined Income and Expenses of all Funds for the Fiscal Year Ended June 30, 1938

Working Funds:

Income:		
Dues	$22,170.19	
Junior Membership Fees	16,396.60	
Contributions	35,744.43	
Interest on Mortgages	30,658.05	
Interest on Bonds	10,754.57	
Dividends on Stocks	19,766.40	
Rent Real Estate	14,640.43	
Sale of Books, Printed Matter, Supplies, etc.	18,747.71	
BIRD-LORE, Subscriptions and Advertising	7,022.95	
Royalties	1,884.00	
Income—Audubon Nature Camp 1937 Season	13,047.33	
Sale of Paintings	350.00	
Miscellaneous	103.30	
Total Working Funds Income		$191,285.96
Expenses:		
Administrative and Clerical Salaries and Expenses	$54,837.93	
Field Representatives' Salaries and Expenses	7,505.04	
Educational Leaflets	5,889.74	
Buttons Supplied to Junior Members	690.37	
Essay Contest	540.86	
Salaries, Sanctuary Supervision, Wardens and their Expenses	25,756.36	
Repairs and Improvements—Sanctuaries	1,875.87	
Feed for Water-fowl	308.00	
Taxes	1,980.33	
Gasoline	2,387.43	
Posters and Signs	176.16	
Rent—Witmer Stone Sanctuary	150.00	
Soliciting Funds—Sanctuary Department	246.35	
Sanctuary Contribution	25.00	
Printing and Mailing BIRD-LORE	10,518.97	
Engravings for BIRD-LORE	1,038.45	
Promotion Expense—BIRD-LORE	300.75	
Investigations	1,270.92	
Printing and Multigraphing	3,109.69	
Postage and Expressage	6,250.99	
Forward	$124,859.21	$191,285.96

Brought Forward	$124,859.21	$191,285.96
Cost of Books and Supplies	10,316.53	
Insurance	1,604.09	
Communications with Actual and Potential Members	3,059.27	
Press Clippings and Releases	1,501.15	
Envelopes and Office Supplies	1,215.20	
Annuities	1,680.00	
Legal Service	1,724.75	
Office Rent	6,371.69	
Telephone and Telegrams	2,265.91	
Service Charge for Handling Securities	4,018.32	
Prints	96.04	
Electros and Halftones	101.43	
Real Estate Operations	11,054.84	
Expense Incurred for Protection of Mortgages	450.00	
Employees' Pension and Group Insurance	2,544.65	
Fellowship Research Contributions	2,926.32	
Library Expense	238.55	
Annual Meeting Expense	497.48	
Accounting	700.00	
Drainage—Pamphlets and Sundry Expense	1,030.37	
Royalties	250.00	
Staff Lecturing Expense	169.25	
Electric Lights	679.75	
Sanctuary Bulletins	1,499.19	
Write-off in Valuing Copies of *Florida Bird Life* Acquired	6,833.46	
Expense—Audubon Nature Camp 1937 Season	13,379.72	
Miscellaneous	2,154.11	
Total Working Fund Expenses		203,221.28
Excess of Disbursements over Income		$11,935.32
Deduct: Transfer of Income from Investments Building Fund to Working Funds		4,778.81
Net Operating Deficit for the Fiscal Year		$7,156.51

A contribution of $5,000 has been received since June 30, to be applied in reduction of this $7,156.51 operating deficit.

Non-Working Funds:

Additions:		
Life Members	$800.00	
Bequests	9,098.20	
Stock Received as Dividend	563.37	
Contributions to Building Fund	253.00	
Interest from Real Estate Mortgages	745.00	
Interest on Bonds	1,721.05	
Dividends from Stocks	3,567.63	
Rent from Real Estate	623.07	
Adjustment of Old Slides Inventory	424.55	
Total Additions Forward		$17,795.87

Total Additions Brought Forward			$17,795.87
Deductions:			
Expense of Real Estate Properties		$402.74	
Service Charge for Handling Securities		765.28	
Loss from Sale of Securities		14,295.03	
Write down of book value of 228 East 100th St. Property		7,681.67	
Loss from Sale of Third Ave. Property		341.30	
Legal Expense *re* Finley Barrell Bequest		829.03	
Adjustment of 1936 and 1937 Camp Insurance		87.29	
Depreciation		2,271.44	
Uncollectible Accounts Receivable written off		29.08	
Transfer of Income from Investments Building Fund to Working Funds	$4,778.81		
to 1938 Camp Season	140.51		
		4,919.32	
Total Deductions			$31,622.18
Excess of Deductions over Additions—Non-Working Funds			$13,826.31
Add: Net Operating Deficit—Working Funds			7,156.51
Net Decrease of Fund Balances			$20,982.82
Net Decrease of Fund Balances:			
Total Fund Balances June 30, 1937		$1,714,415.04	
Total Fund Balances June 30, 1938		1,693,432.22	
Net Decrease		$20,982.82	

We certify that the appended Balance Sheet is, in our opinion, properly drawn up and shows the true financial position of the Association as at June 30, 1938, and that the combined Income and Expense Statement is a fair and correct statement of earnings for the fiscal period ended that date, subject to the comments in our detailed report submitted under date of September 1, 1938.—JOHN H. KOCH & CO., *Certified Public Accountants.*

Members wishing more detailed information may secure it from the office of the National Association of Audubon Societies, 1006 Fifth Avenue, New York, N. Y.

We regret that, because of lack of space, it has been necessary to omit 'Book News and Reviews' from this issue.

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